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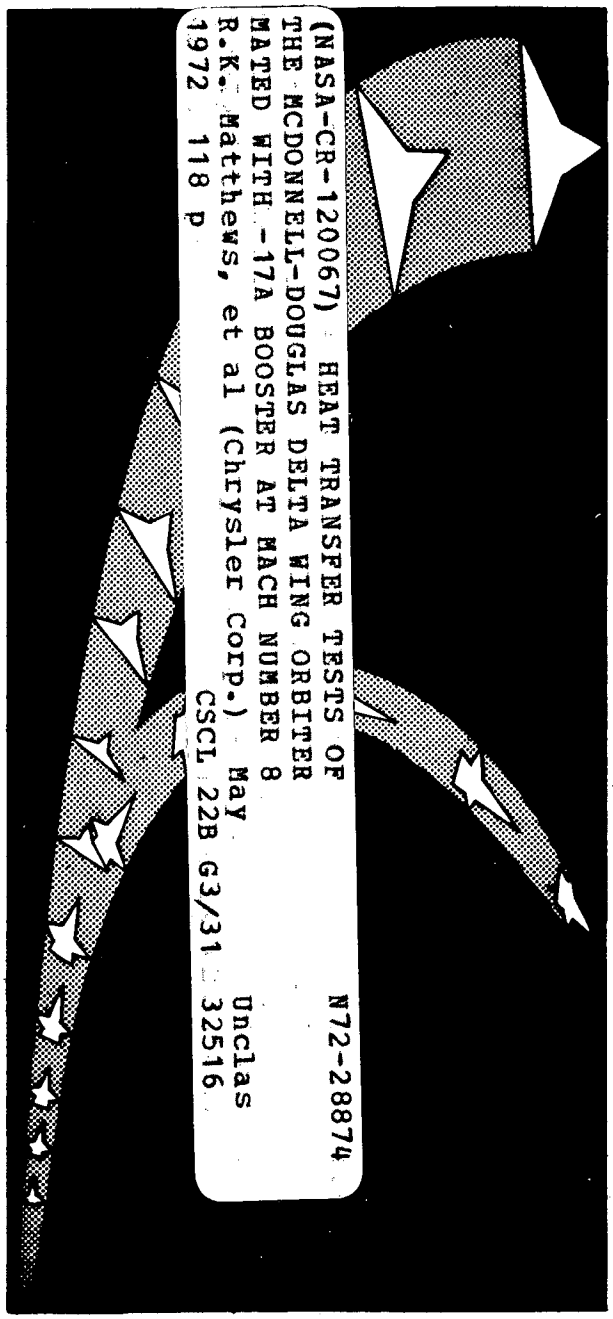

SADSAC SPACE SHUTTLE
AEROTHERMODYNAMIC
DATA MANAGEMENT SYSTEM

CONTRACT NAS8-4016
MARSHALL SPACE FLIGHT CENTER

SPACE DIVISION CHRYSLER CORPORATION

—SPACE SHUTTLE—

HEAT TRANSFER TESTS OF THE McDONNELL-DOUGLAS DELTA WING ORBITER MATED WITH -17A BOOSTER AT MACH NUMBER 8

by

R. K. Matthews, ARO, Inc
W. R. Martindale, ARO, Inc
J. D. Warmbrod, MSFC

VKF 50-INCH
HYPERSONIC TUNNEL B

Arnold Engineering
Development Center

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SADSAC/SPACE SHUTTLE

WIND TUNNEL TEST DATA REPORT

CONFIGURATION: McDonnell-Douglas Delta Wing Orbiter Mated With the - 17A Booster

TEST PURPOSE: To Determine Interference Heating at Mach Number of 8

TEST FACILITY: AEDC VKF 50-Inch Hypersonic Tunnel B

TESTING AGENCY: AEDC - MSFC

TEST NO. & DATE: VT 1162-9; June, 1971

FACILITY COORDINATOR: L. L. Trimmer, ARO, Inc.

PROJECT ENGINEER(S): R. K. Matthews, W. R. Martindale, ARO, Inc.
J. D. Warmbrod, MSFC

Details of illustrations in this document may be better studied on microfiche

DATA MANAGEMENT SERVICES

LIAISON: J. E. Vaughn

DATA OPERATIONS: J. R. Ziler

RELEASE APPROVAL: D. Kemp, Supervisor
Aero Thermo Data Group

CONTRACT NAS 8-4016 AMENDMENT 158 DRL 297 - 84a

FACILITY COORDINATOR:

Mr. L. L. Trimmer, ARO, INC.
Arnold Engineering Development Center
Arnold Air Force Station, Tennessee 37389

Phone: (615) 455-2611-X7377

PROJECT ENGINEERS:

Mr. R. K. Matthews, ARO, INC.
Arnold Engineering Development Center
Arnold Air Force Station, Tennessee 37389

Phone: (615) 455-2611-X594

Mr. W. R. Martindale, ARO, INC.
Arnold Engineering Development Center
Arnold Air Force Station, Tennessee 37389

Phone: (615) 455-2611-X575

Mr. J. D. Warmbrod
Marshall Space Flight Center
S&E-AERO-AF, Building 4610
Huntsville, Alabama 35801

Phone: (205) 453-0170

SADSAC LIAISON:

Mr. J, E. Vaughn
Chrysler Space Division
102 Wynn Drive
Department 4820
Huntsville, Alabama 35805

Phone: (205) 895-1560

SADSAC OPERATIONS:

Mr. J. R. Ziler
Chrysler Corp. Space Division
P. O. Box 29200
Department 2780
New Orleans, Louisiana 70129

Phone: (504) 255-2304

FOREWORD

The work reported herein was sponsored by the Marshall Space Flight Center (MSFC), NASA. The results of tests presented were obtained by ARO, Inc. (a subsidiary of Sverdrup and Parcel & Associates, Inc.), contract operator of the Arnold Engineering Development Center (AEDC), AFSC, Arnold Air Force Station, Tennessee. Ascent and reentry conditions were simulated on shuttle models designed by McDonnell Douglas (MDAC), North American Rockwell (NAR) and General Dynamics Convair (GDC). In addition a limited amount of data were obtained on two research models provided by the Langley Research Center (LRC). Because of the broad scope of these tests the data will be presented in a series of SADSAC reports. This report presents the results of the phase-change paint test conducted at Mach 8 in Tunnel B on the McDonnell Douglas Delta Wing Orbiter mated with the -17A Booster. This volume (Volume I) contains the mated data and Volume II contains the interference-free data for the orbiter and booster alone.

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LIST OF FIGURES

LIST OF TABLES

NOMENCLATURE

ALPHA-MODEL (α)	Model angle of attack, deg
ALPHA-PREBEND	Sting prebend angle, deg
ALPHA-SECTOR	Tunnel sector pitch angle, deg
H(TO) or H	Heat-transfer coefficient based on $T_{aw} = T_o$, $BTU/ft^2 - sec - °R$, and $H(TO) = \frac{\beta\sqrt{\rho ck}}{\sqrt{\Delta t}}$ where β is obtained from $\frac{T_{pc} - T_i}{T_{aw} - T_i} = 1 - e^{\beta^2}\,erfc\beta$ and $\Delta t \sim$ del time
	$T_{pc} \sim$ phase-change paint temperature, °R
	$T_i \sim$ initial model temperature, °R
	$T_{aw} \sim$ adiabatic wall temperature, °R
	$\sqrt{\rho ck} \sim$ model material properties = $0.11-0.008\sqrt{(\Delta t)}$ $BTU/ft^2-sec^{1/2} - °R$
H(.9TO)	Heat transfer coefficient based on $T_{aw} = 0.9T_o$
H(.85TO)	Heat transfer coefficient based on $T_{aw} = .85T_o$
HREF	Reference heat transfer coefficient based on Fay-Riddell theory, $BTU/ft^2-sec\ °R$ $HREF = \left[\frac{8.139(P01)^{0.5}\ (MU-0)^{0.4}\ (1-P-INF/P01)^{0.25}}{(RN)^{0.5}\ (TO)^{0.15}}\right] X$ $[0.2235 + 0.0000135\ (T_o + 760)]$ where P01 $\sim$ stagnation pressure downstream of a normal shock, psia
	MU-0 $\sim$ air viscosity based on T_o, $lb_f\ sec/ft^2$
	RN $\sim$ reference nose radius, (0.011 ft)

MU-INF	Free-stream viscosity, lb-sec/ft^2
P-INF	Free-stream static pressure, psia
PO	Tunnel stilling chamber pressure, psia
Q-INF	Free-stream dynamic pressure, psia
RE/FT	Free-stream unit Reynolds number, ft^{-1}
ROLL-MODEL	Model roll angle, deg
ST(TO)	Stanton number based on T_o, $$ST(TO) = \frac{H(TO)}{\rho_\infty V_\infty \, [0.2235+0.0000135 \, (T_o+T_{pc})]x(32.17)}$$
STREF	Reference Stanton number $$STREF = \frac{HREF}{\rho_\infty V_\infty \, [0.2235+0.0000135 \, (T_o+T_{pc})]x(32.17)}$$
T-INF	Free-stream static temperature, °R
TO	Tunnel stilling chamber temperature, °R
TW	Model wall temperature, °R
TIME	Time from start of model injection, sec
DEL TIME (Δt)	Time model exposed to airstream, sec
V-INF (V_∞)	Free-stream velocity, ft/sec
YAW	Model yaw angle, deg
X	Axial distance from booster nose to orbiter nose (1.86 in., see Fig. 3)

SECTION 1

INTRODUCTION

This report presents the results of a wind tunnel test program to determine aerodynamic heat transfer distributions on the McDonnell Douglas configurations. The tests were conducted at the Arnold Engineering Development Center (AEDC) in Tunnel B of the von Karman Gas Dynamics Facility (VKF). The test period was in June 1971.

Heat-transfer rates were determined by the phase-change paint technique on 0.011-scale Stycast® models using Tempilaq® as the surface temperature indicator. The nominal test conditions were; Mach 8, free-stream unit Reynolds numbers of 0.8×10^6, 2.5×10^6, and 3.7×10^6, and angles of attack of -5, 0, +5 deg. Model details, test conditions, phase-change paint photographs and reduced heat-transfer coefficients are presented in this report.

SECTION 2

MODELS AND APPARATUS

2.1 MODEL DESCRIPTION

Model drawings were provided ARO, Inc. by the McDonnell Douglas Corporation and fabrication of the Stycast models was subcontracted to the Grumman Aircraft Corporation. Sketches showing the overall model dimensions of the orbiter and booster are presented in Figs. 1 and 2, respectively, and a photograph of the mated configuration is shown in Fig. 3. Table 1 provides additional configuration description details but it should be pointed out that the models were cast as one smooth surface without moveable control surfaces. Presented in Table 2 are model coordinate measurements referenced to the axis system illustrated in Figs. 1 and 2.

Six-in.-diam hemispheres were cast from the same batch of Stycast used to cast the models so that the Stycast thermal properties could be determined from calibration runs on the hemispheres. Also Chromel-Alumel thermocouples were cast into the models approximately 1/8-in. from the surface to measure the initial model temperature.

2.2 FACILITY DESCRIPTION

Tunnel B is a continuous, closed-circuit, variable density wind tunnel with an axisymmetric contoured nozzle and a 50-in.-diam test section. The tunnel can be operated at a nominal Mach number of 6 or 8 at stagnation pressures from 20 to 300 and 50 to 900 psia, respectively, at stagnation temperatures up to 1350°R. The model may be injected into the tunnel for a test run and then retracted for model cooling or model changes without interrupting the tunnel flow.

SECTION 3

PROCEDURES

3.1 TEST TECHNIQUE

Prior to each run the models were cleaned and cooled with alcohol and then spray painted with Tempilaq. In some cases the local interference region between the models was sprayed with a higher temperature paint since the surface temperatures were generally higher in this region (see group 206 for example). The models were installed on the model injection mechanism at the desired test attitude and the initial temperature of each model was measured with a thermocouple probe or with the model-embedded thermocouples. During the course of the test many of the embedded thermocouples became inoperative and the probe temperature was generally used to determine the initial temperatures of the models. The models were then injected into the airstream for approximately 20 seconds and during this time the model surface temperature rise produced isotherm melt lines. The progression of the melt lines was photographed with 70-mm sequenced cameras operating at 2 frames per second.

3.2 TEST CONDITIONS

Nominal test conditions are presented in the data summary sheets (Table 2). As mentioned in the foreword this test was part of a comprehensive Space Shuttle investigation and as a result the run numbers are not consecutive. The specific test conditions for each run (or group) are provided on the data tabulation sheets preceding each set of melt line photographs.

During each run the tunnel conditions and time of each picture were recorded on magnetic tape. The heat transfer coefficient for each picture was calculated from the semi-infinite slab transient heat conduction equation.

$$\frac{T_{pc} - T_i}{T_{aw} - T_i} = 1 - e^{\beta^2} \operatorname{erfc} \beta$$

where $\beta = \frac{h\sqrt{\Delta t}}{\sqrt{\rho ck}}$ and $\sqrt{\rho ck} = 0.11 - 0.008\sqrt{\Delta t}$.

The equation for the thermal properties ($\sqrt{\rho ck}$) of Stycast was obtained by evaluation of a considerable amount of hemisphere calibration data and supplemented by VKF laboratory measurements.

Heat-transfer coefficients were calculated for assumed adiabatic wall temperatures of T_o, $0.9T_o$, and $0.85T_o$ (see tabulated data sheets). The use of three values of T_{aw} provides an indication of the sensitivity of the heat-transfer coefficient (h) to the values of T_{aw} assumed. For the sake of consistency all heat-transfer coefficients shown on the photographs are based on $T_{aw} = T_o$.

All heat-transfer coefficients were non-dimensionalized by dividing by the stagnation point heat-transfer coefficient (Ref. 1) on a 0.011-ft radius sphere (a 1-ft radius sphere scaled down by the model scale).

SECTION 4

DATA PRESENTATION

The test results are presented as a series of four photographs obtained during each run and a post-test photograph of the interference

region when two paints were used. The photographs are grouped as follows:

Model Surface	Re/ft	α
Side view of mated configuration*	0.8×10^6	-5, 0, +5
	2.5×10^6	"
	3.7×10^6	0

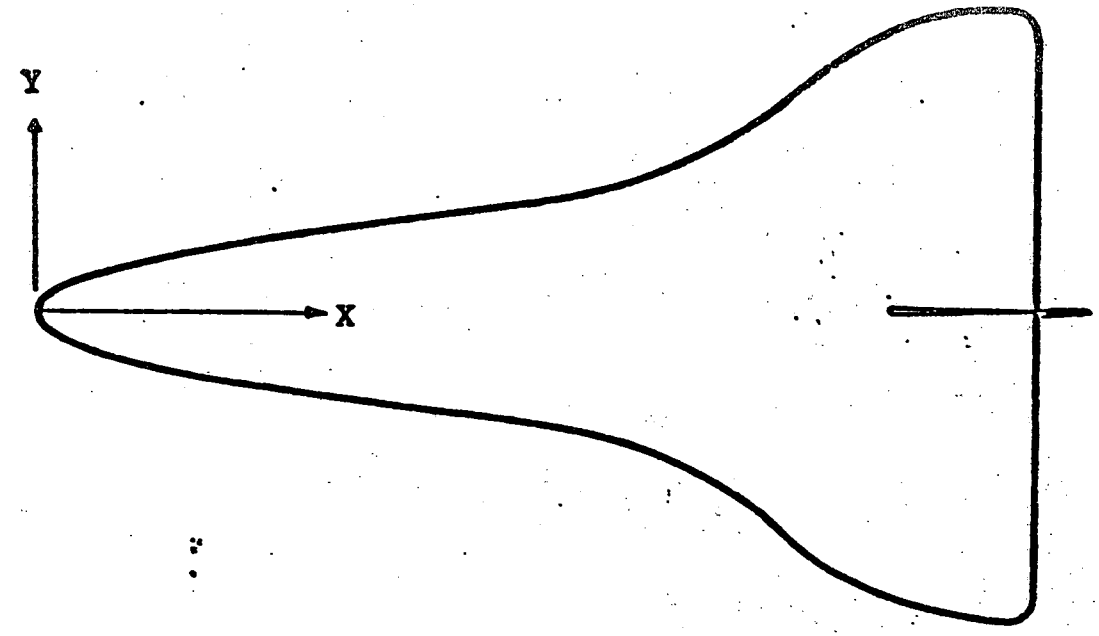
*The corresponding data for the orbiter and booster alone (non-interference) are presented in Volume II.

Preceding each set of photographs is a tabulated data sheet which lists the specific test conditions and the time of each picture with the corresponding heat-transfer parameters. Of course, the heat-transfer parameters apply only to the melt lines of the corresponding picture. Body coordinates of the melt lines may be obtained by use of the grid overlay provided with this report.

The post-test photographs give an indication of the severe heating which can occur between mated configurations if some type of wind shield or seal is not provided along the mating line. The heat-transfer ratios associated with the melt lines in these photographs are approximate because of the uncertainties in time and flow conditions which occur when the model is retracted from the airstream. Table 4, Page 38, presents a Summary Index for these data.

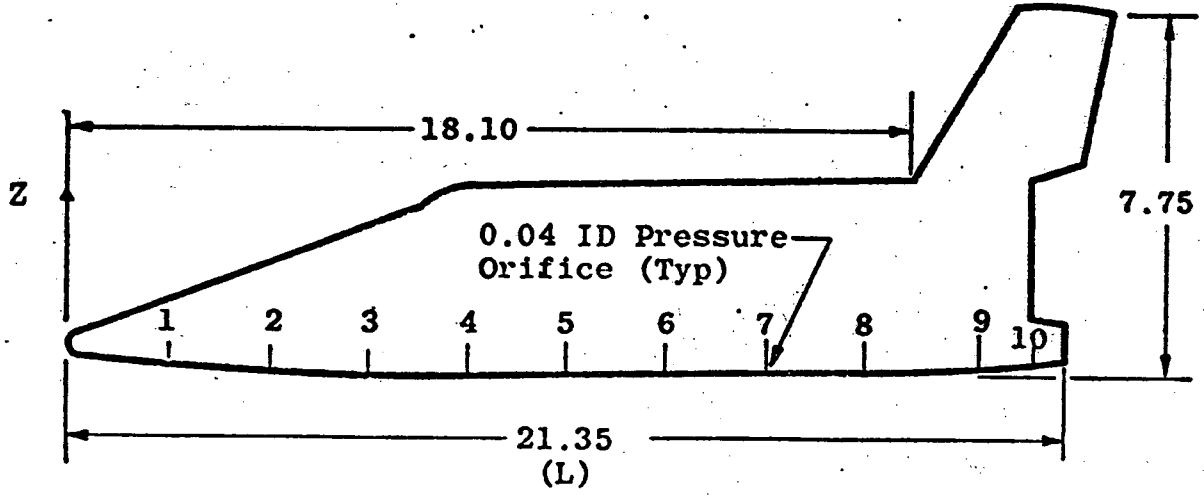
REFERENCES

1. Fay, J. A. and Riddell, F. R. "Theory of Stagnation Point Heat Transfer in Dissociated Air." Journal of the Aeronautical Sciences, Vol. 25, 1958, pp. 73-85.



Pressure Orifice	X/L
1	0.1
2	0.2
3	0.3
4	0.4
5	0.5
6	0.6
7	0.7
8	0.8
9	0.916
10	0.970

All Dimensions in Inches



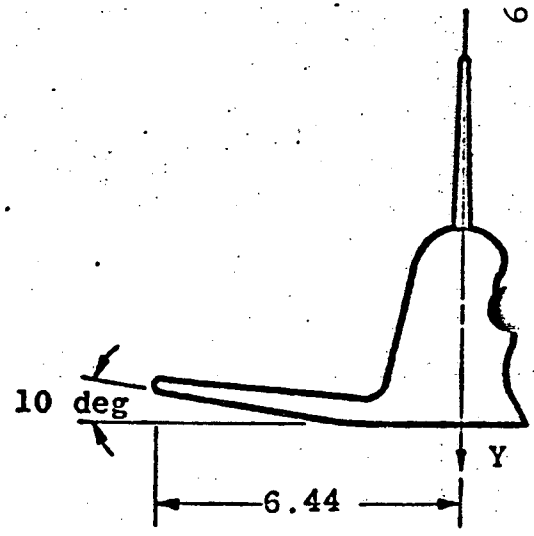
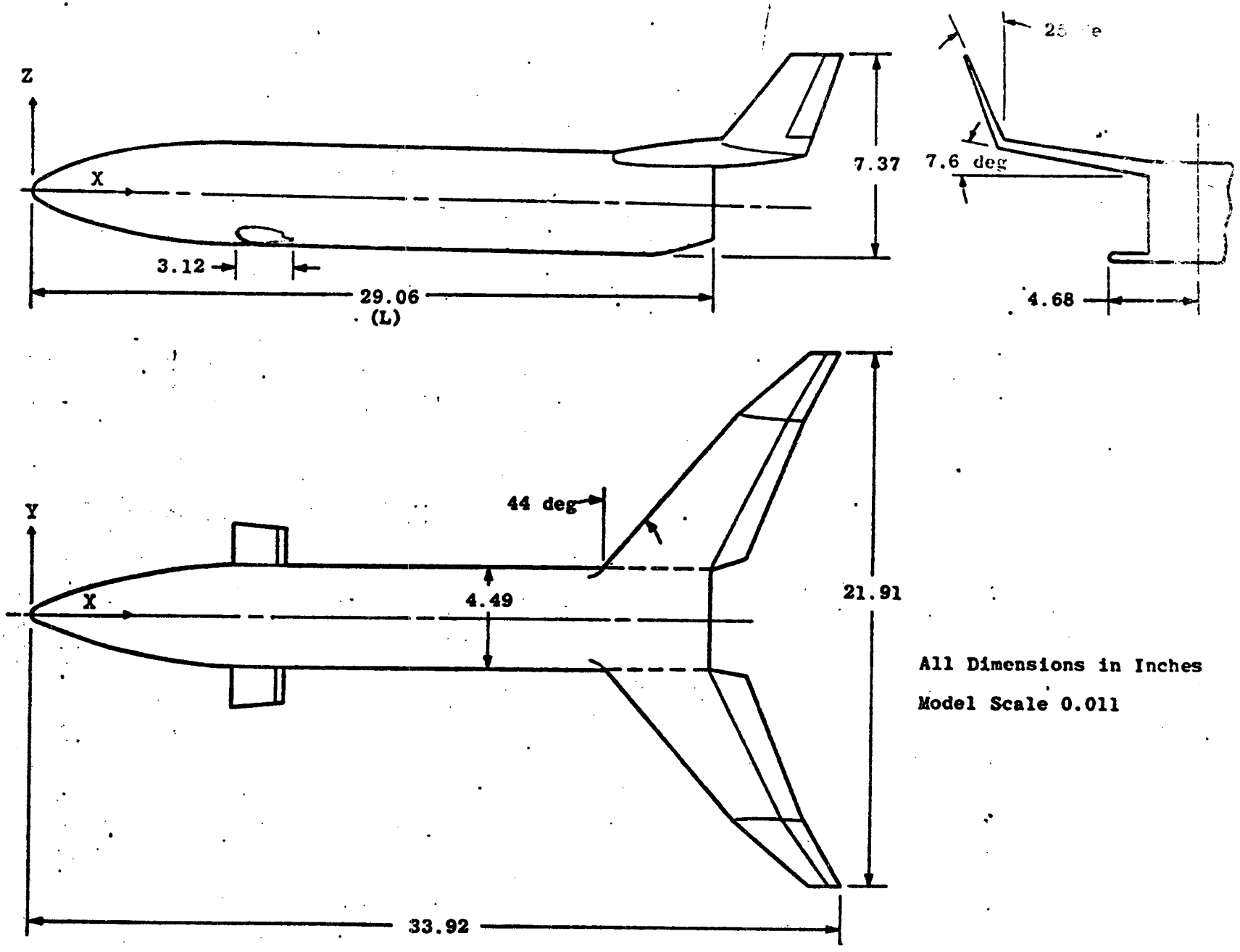


Fig. 1 McDonnell Douglas Delta Wing Orbiter Model Sketch (0.011 Scale)



All Dimensions in Inches

Model Scale 0.011

Fig. 2 McDonnell-Douglas Booster (MDAC-B)

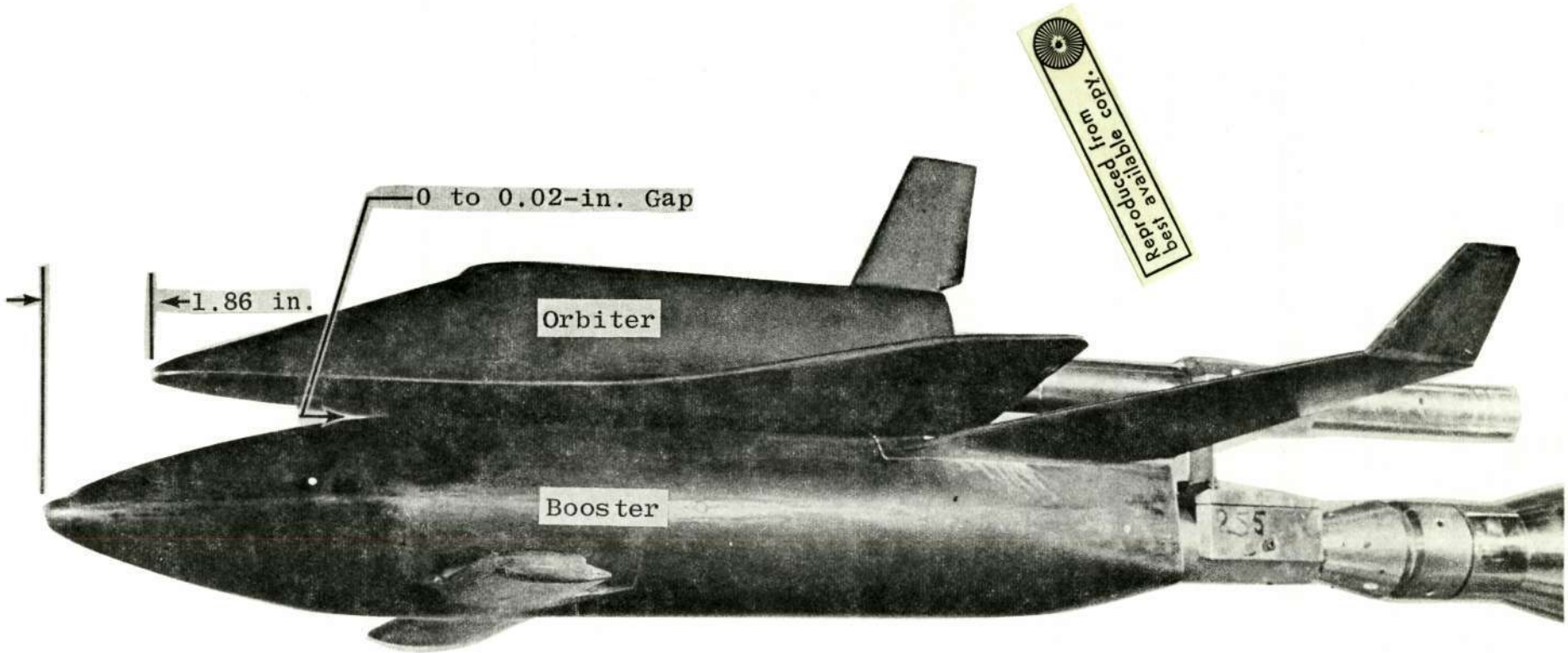


Fig. 3 Photograph of Mated Configurations

Table 1

Configuration Description Details

MODEL COMPONENT: BODY - MDAC Booster

GENERAL DESCRIPTION: Configuration 256-17A booster; model scale 0.011

DRAWING NUMBER: 256-17-0001, Rev. A

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length (ft)	220.17	2.42
Max. Width (ft)	34.0	0.374
Max. Depth (ft)	34.0	0.374
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		

MODEL COMPONENT: Wing - MDAC Booster

GENERAL DESCRIPTION: Configuration 17A Wing

Model Scale 0.011

DRAWING NUMBER:

DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL DATA		
Area, ft^2		
Planform	6020.0	.729
Wetted		
Span (equivalent), ft.	146.0	1.606
Aspect Ratio	3.54	3.54
Rate of Taper		
Taper Ratio	.435	.435
Diehedral Angle, degrees	7.67	7.67
Incidence Angle, degrees	3.0	3.0
Aerodynamic Twist, degrees	0	0
Toe-In Angle		
Cant Angle		
Sweep Back Angles, degrees		
Leading Edge	44.0	44.0
Trailing Edge		
0.25 Element Line		
Chords:		
Root (Wing Sta. 0.0), inches	690.0	7.59
Tip, (equivalent)	300.0	3.30
MAC, inches	520.0	5.72
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
Airfoil Section		
Root	0010-64	0010-64
Tip	0010-64	0010-64
EXPOSED DATA		
Area, ft^2	4190.0	.506
Span, (equivalent)		
Aspect Ratio		
Taper Ratio		
Chords		
Root, inches	594.0	6.54
Tip, inches	300.0	3.30
MAC		
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		

MODEL COMPONENT: Elevon - MDAC Booster

GENERAL DESCRIPTION: Configuration 17A Elevons
Model Scale 0.011

DRAWING NUMBER: 256-17-0001, Rev. A

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Area	617 ft^2	.0745 ft^2
Span (equivalent)	650 in.	7.15 in.
Inb'd equivalent chord	180 in.	1.98 in.
Outb'd equivalent chord	93 in.	1.02 in.
Ratio Elevator chord/horizontal tail chord		
At Inb'd equiv. chord	.3	.3
At Outb'd equiv. chord	.3	.3
Sweep Back Angles, degrees		
Leading Edge	33	33
Tailing Edge	27	27
Hingeline	33	33
Area Moment (Normal to hinge line), ft^3	2998	

MODEL COMPONENT: Vertical Tails - MDAC Booster

GENERAL DESCRIPTION: Configuration 17 Vertical Tails

Model Scale 0.011

DRAWING NUMBER: 256-17-0001, Rev. A

DIMENSIONS:

	FULL-SCALE	MODEL SCALE
TOTAL DATA (Values for one)		
Area		
Planform (True)	438	.0523
(Side Projection)	397	.0478
Span (equivalent), inches	276	3.03
Aspect Ratio	1.21	1.21
Rate of Taper		
Taper Ratio	.520	.520
Diehedral Angle, degrees		
Incidence Angle, degrees		
Aerodynamic Twist, degrees		
Toe-In Angle	0	0
Cant Angle	25	25
Sweep Back Angles, degrees		
Leading Edge	40	40
Trailing Edge		
0.25 Element Line		
Chords:		
Root (Wing Sta. 0.0)	300	3.30
Tip, (equivalent), inches	156	1.71
MAC, inches	236	2.59
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
Airfoil Section		
Root	NACA 64A-009	NACA 64A-009
Tip	NACA 64A-009	NACA 64A-009
EXPOSED DATA		
Area		
Span, (equivalent)		
Aspect Ratio		
Taper Ratio		
Chords		
Root		
Tip		
MAC		
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		

MODEL COMPONENT: Canard - MDAC Booster

GENERAL DESCRIPTION: Configuration 17A Canard

Model Scale 0.011

DRAWING NUMBER: 256-17-001, Rev. A

DIMENSIONS:		FULL-SCALE	MODEL SCALE
Theo. Area, ft^2		1660	.200
Exp Area, ft^2		1215	.146
Aspect Ratio		3.0	3.0
Chord (Incl. Flap), ft		23.625	.260
Airfoil (360 In. Theo Chord)	NACA	63-018	NACA 63-018

Table 1

Configuration Description Details

MODEL COMPONENT: BODY - MDAC Orbiter

GENERAL DESCRIPTION: Basic fuselage contours including canopy.

Model scale: 0.011

DRAWING NUMBER: 255 BJ 00050, Rev. B

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length (ft.)	156.4	1.720
Max. Width	27.1	.298
Max. Depth	30.3	.333
Fineness Ratio		
Area ($ft.^2$)		
Max. Cross-Sectional	627.4	.0759
Planform	3790.0	.459
Wetted	12520.0	1.515
Base	447.0	.0541

Note: All units are ft. or sq. ft.
These data include both sides of the vehicle.

MODEL COMPONENT: Elevon - MDAC Orbiter

GENERAL DESCRIPTION: Model Scale: 0.011

DRAWING NUMBER: 255 BJ 00050, Rev. B

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Area, ft^2	963.	.117
Span (equivalent), ft.	73.7	.811
Inb'd equivalent chord, ft.	12.8	.141
Outb'd equivalent chord, ft.	12.8	.141
Ratio Elevator chord/horizontal tail chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge	0.0	0.0
Tailing Edge	0.0	0.0
Hingeline	0.0	0.0
Area Moment (Normal to hinge line)		

Note: All units are ft., sq. ft., or degrees.
These data include both sides of vehicle.

Table 1 - continued

MODEL COMPONENT: Body Flap - MDAC Orbiter

GENERAL DESCRIPTION: Model Scale: 0.011

DRAWING NUMBER: 255 BJ 00050, Rev. B

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Area, ft^2	140.88	.0170
Span (equivalent), ft.	23.81	.262
Inb'd equivalent chord, ft.	5.333	.0587
Outb'd equivalent chord, ft.	12.80	.141
Ratio Elevator chord/horizontal tail chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge	0.0	0.0
Tailing Edge	0.0	0.0
Hingeline	0.0	0.0
Area Moment (Normal to hinge line)		

Note: All dimensions in ft., sq. ft., or degrees.
These data include both sides of vehicle.

MODEL COMPONENT: Wing - MDAC Orbiter

GENERAL DESCRIPTION: Model Scale: 0.011

DRAWING NUMBER: 255 BJ 00050, Rev. B

DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL DATA		
Area, ft^2		
Planform	5330.	.645
Wetted		
Span (equivalent), ft.	97.5	1.073
Aspect Ratio	1.68	1.68
Rate of Taper		
Taper Ratio	0.230	.230
Dichedral Angle, degrees	10.0	10.0
Incidence Angle, degrees	2.0	2.0
Aerodynamic Twist, degrees	0	0
Toe-In Angle	0	0
Cant Angle	0	0
Sweep Back Angles, degrees		
Leading Edge	55.0	55.0
Trailing Edge	0	0
0.25 Element Line	47.0	47.0
Chords: (ft.)		
Root (Wing Sta. 0.0)	90.43	.995
Tip, (equivalent)	20.80	.229
MAC	63.30	.696
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
Airfoil Section		
Root	0010-64	0010-64
Tip	0012-64	0012-64
EXPOSED DATA		
Area, $ft.^2$	3147.3	.381
Span, (equivalent), ft.	70.5	.776
Aspect Ratio	1.47	1.47
Taper Ratio		
Chords (ft.)		
Root	71.25	.784
Tip	20.30	.223
MAC	52.20	.574
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		

Note: All units are ft., sq. ft. or degrees.

Table 1 - continued

MODEL COMPONENT: Rudder - MDAC Delta Wing Orbiter

GENERAL DESCRIPTION: Model Scale: 0.011

DRAWING NUMBER: 255 BJ 00050, Rev. B

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Area, $ft.^2$	213.9	.0259
Span (equivalent), ft.	27.5	.303
Inb'd equivalent chord, ft.	9.50	.105
Outb'd equivalent chord, ft.	6.10	.0671
Ratio Elevator chord/horizontal tail chord		
At Inb'd equiv. chord	.369	.369
At Outb'd equiv. chord	.369	.369
Sweep Back Angles, degrees		
Leading Edge	30.0	30.0
Tailing Edge	13.38	13.38
Hingeline	19.95	19.95
Area Moment (Normal to hinge line)		

Note: All units are ft., sq. ft., or degrees.

MODEL COMPONENT: Vertical Tail - MDAC Orbiter

GENERAL DESCRIPTION: Model Scale: 0.011

DRAWING NUMBER: 255 BJ 00050, Rev. B

DIMENSIONS:

	FULL-SCALE	MODEL SCALE
TOTAL DATA		
Area, ft.^{2}		
Planform	580.0	.702
Wetted		
Span (equivalent), ft.	27.5	.303
Aspect Ratio	1.30	1.30
Rate of Taper		
Taper Ratio	.638	.638
Dihedral Angle, degrees	0	0
Incidence Angle, degrees	0	0
Aerodynamic Twist, degrees	0	0
Toe-In Angle	0	0
Cant Angle	0	0
Sweep Back Angles, degrees		
Leading Edge	30.0	30.0
Trailing Edge	13.4	13.4
0.25 Element Line	26.2	26.2
Chords: (ft.)		
Root (Wing Sta. 0.0)	25.75	.283
Tip, (equivalent)	16.42	.181
MAC	21.43	.236
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
Airfoil Section		
Root	0009-64	0009-64
Tip	0009-64	0009-64
EXPOSED DATA		
Area, ft.^{2}	580.	.702
Span, (equivalent), ft.	27.5	.303
Aspect Ratio	1.30	1.30
Taper Ratio	.638	.638
Chords (ft.)		
Root	25.75	.283
Tip	16.42	.181
MAC	21.43	.236
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		

Table 2

AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162 B00

MODEL GEOMETRY OF MDAC-8 SIDE SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
1	0															
1	0	0														
2	.12															
2	.04	-.20	0	-.20	.15	-.12	.21	0	.21	.01	.16	.16	.06	.20	0	.21
3	.24															
10	0	-.29	.10	-.27	.23	-.15	.29	0	.29	.01	.24	.17	.15	.23	0	.27
4	.37															
18	0	-.35	.13	-.31	.29	-.17	.37	0	.35	.01	.32	.15	.16	.28	0	.32
5	.49															
26	0	-.46	.06	-.40	.22	-.35	.37	-.18	.44	0	.44	.01	.40	.17	.24	.32
	0	.35														
6	.61															
35	0	-.49	.27	-.40	.44	-.17	.49	0	.49	.01	.45	.18	.38	.29	.23	.37
	.12	.38	0	.39												
7	.73															
49	0	-.55	.20	-.50	.37	-.43	.49	-.24	.55	0	.55	.01	.51	.22	.39	.39
	.33	.48	.18	.48	.05	.51	0	.53								
8	.86															
57	0	-.60	.16	-.57	.37	-.48	.55	-.24	.61	0	.62	.01	.59	.20	.50	.37
	.45	.42	.40	.50	.32	.59	.17	.60	0	.60						
9	.98															
70	0	-.67	.22	-.60	.46	-.45	.61	-.24	.66	0	.66	.01	.64	.22	.54	.38
	.49	.46	.44	.53	.33	.60	.23	.64	.11	.65	0	.65				
10	1.22															
84	0	-.73	.20	-.71	.48	-.57	.66	-.35	.76	0	.76	.01	.70	.31	.57	.51
	.45	.65	.27	.72	0	.76										
11	1.83															
95	0	-.95	.28	-.92	.64	-.72	.89	-.38	.97	0	.97	.01	.93	.29	.79	.59
	.61	.82	.31	.93	0	.95										
12	2.44															
106	0	-1.14	.34	-1.10	.75	-.88	1.10	-.38	1.16	0	1.16	.01	1.11	.38	.94	.72
	.77	.97	.46	1.12	.28	1.15	0	1.15								
13	3.06															
119	0	-1.31	.33	-1.27	.87	-.99	1.23	-.50	1.34	0	1.34	.01	1.25	.49	1.05	.88
	.82	1.20	.60	1.30	.31	1.33	0	1.33								

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MODEL GEOMETRY OF MDAC-B SIDE SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
14	3.67															
130	0	-1.45	.35	-1.42	.75	-1.27	1.15	-.95	1.42	-.45	1.50	0	1.50	.01	1.45	.37
	1.30	.77	1.09	1.14	.92	1.36	.78	1.43	.61	1.48	.49	1.49				
15	4.89															
144	0	-1.72	.64	-1.60	1.33	-1.12	1.69	-.49	1.77	0	1.76	.01	1.75	.28	1.63	.71
	1.37	1.20	1.16	1.50	.99	1.66	.73	1.76								
16	6.11															
156	0	-1.96	.32	-1.93	1.03	-1.67	1.63	-1.12	1.91	-.51	1.99	0	1.99	.01	1.94	.50
	1.74	1.00	1.43	1.52	1.23	1.80	1.11	1.89	.95	1.97	.73	2.00				
17	7.33															
170	0	-2.11	.43	-2.07	.98	-1.87	1.48	-1.50	1.86	-1.00	2.08	-.51	2.16	0	2.16	.01
	2.09	.60	1.83	1.20	1.63	1.56	1.43	1.86	1.30	2.03	1.10	2.14	.92	2.18		
18	8.80															
185	4.28	-1.87	4.31	-1.80	4.29	-1.69	1.76	-1.67	2.27	-1.67	3.02	-1.67	3.65	-1.67	4.17	-1.67
	1.69	-1.58	1.70	-1.45	1.78	-1.30	1.98	-.90	2.14	-.45	2.19	0	2.19	.01	2.18	.37
	1.96	1.03	1.64	1.61	1.41	1.98	1.25	2.13	1.05	2.20	.79	2.22				
19	9.78															
207	4.45	-2.10	4.49	-2.08	4.56	-1.89	4.56	-1.70	4.51	-1.54	4.42	-1.44	2.07	-1.43	2.82	-1.43
	3.41	-1.43	4.09	-1.43	4.28	-1.43	1.89	-1.42	1.81	-1.33	1.86	-1.17	2.02	-.86	2.10	-.59
	2.16	-.29	2.20	0	2.20	.01	2.18	.32	2.04	.84	1.66	1.56	1.43	1.94	1.26	2.11
	1.09	2.20	.82	2.22												
20	11.31															
231	4.42	-2.10	4.47	-1.93	4.47	-1.80	1.77	-1.60	2.04	-1.59	2.68	-1.59	3.64	-1.59	4.25	-1.59
	4.36	-1.59	1.71	-1.53	1.70	-1.45	1.86	-1.17	2.02	-.83	2.15	-.38	2.20	0	2.20	.01
	2.15	.48	1.93	1.09	1.59	1.71	1.39	2.00	1.27	2.11	1.12	2.19	.94	2.21		
21	11.43															
256	4.45	-2.08	4.45	-1.91	4.45	-1.81	1.80	-1.80	2.46	-1.80	3.20	-1.78	4.00	-1.77	4.30	-1.77
	4.40	-1.77	1.72	-1.76	1.69	-1.56	1.69	-1.48	1.82	-1.21	1.98	-.93	2.07	-.72	2.16	-.33
	2.20	0	2.20	.01	2.19	.29	2.09	.72	1.89	1.16	1.70	1.50	1.50	1.82	1.38	2.02
	1.23	2.14	.95	2.22												
22	11.86															
282	0	-2.15	.29	-2.14	.77	-2.07	1.17	-2.04	1.56	-2.03	4.34	-1.98	4.40	-1.97	2.19	-1.94
	3.04	-1.94	3.90	-1.93	1.69	-1.92	4.34	-1.92	1.65	-1.72	1.60	-1.63	1.63	-1.54	1.77	-1.32
	1.97	-.94	2.13	-.48	2.20	0	2.20	.01	2.15	.49	1.96	1.03	1.71	1.49	1.48	1.07
	1.36	2.03	1.21	2.15	.93	2.21										
23	12.22															
309	0	-2.16	.38	-2.13	.84	-2.04	1.64	-2.02	1.58	-2.02	1.26	-2.02	1.63	-1.88	1.55	-1.75
	1.56	-1.59	1.74	-1.36	1.99	-.89	2.14	-.46	2.20	0	2.20	.01	2.11	.62	1.96	1.01
	1.69	1.52	1.47	1.88	1.33	2.07	1.20	2.15	1.00	2.21	.83	2.21				

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MODEL GEOMETRY OF NDAC-B SIDE SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
24	12.47															
331	0	-2.15	.32	-2.13	.72	-2.04	1.03	-1.97	1.38	-1.96	1.59	-1.94	1.60	-1.93	1.55	-1.86
	1.52	-1.81	1.50	-1.76	1.52	-1.67	1.58	-1.55	1.80	-1.25	1.99	-.90	2.14	-.44	2.20	0
	2.20	.01	2.18	.37	2.03	.88	1.78	1.34	1.63	1.61	1.45	1.91	1.32	2.07	1.19	2.15
	.93	2.21														
25	12.83															
356	.13	-2.15	0	-2.15	.55	-2.09	.98	-1.94	1.41	-1.89	1.26	-1.89	1.42	-1.80	1.44	-1.70
	1.53	-1.56	1.85	-1.14	2.11	-.49	2.20	0	2.20	.01	2.18	.40	2.02	.90	1.78	1.36
	1.54	1.75	1.41	1.97	1.32	2.07	1.19	2.15	1.03	2.20	.81	2.21				
26	13.44															
378	0	-2.14	.20	-2.13	.44	-2.11	.86	-1.97	1.16	-1.82	1.25	-1.81	1.37	-1.70	1.50	-1.54
	1.75	-1.26	2.00	-.83	2.14	-.38	2.20	0	2.20	.01	2.18	.38	1.96	1.04	1.65	1.58
	1.50	1.82	1.38	2.02	1.28	2.09	1.17	2.16	1.03	2.20	.83	2.21				
27	15.89															
400	0	-2.15	.35	-2.11	1.01	-1.89	1.53	-1.53	1.91	-1.03	2.15	-.39	2.20	0	2.20	.01
	2.16	.40	1.97	1.00	1.72	1.43	1.55	1.74	1.39	1.98	1.26	2.11	1.08	2.20	.89	2.21
28	18.33															
416	0	-2.15	0	-2.14	.28	-2.11	.45	-2.10	.72	-2.02	.79	-2.08	1.23	-1.76	1.31	-1.74
	1.81	-1.20	1.85	-1.16	2.13	-.53	2.15	-.44	2.21	0	2.20	0	2.20	.01	2.21	.01
	2.18	.40	2.15	.50	2.09	.72	1.99	.95	1.86	1.23	1.72	1.44	1.74	1.45	1.56	1.71
	1.52	1.80	1.41	1.96	1.37	2.02	1.32	2.08	1.23	2.14	1.16	2.16	1.08	2.20	.83	2.21
	.88	2.21														
29	18.94															
449	0	-2.18	.40	-2.13	1.00	-1.92	1.52	-1.56	1.94	-1.00	2.15	-.48	2.21	0	2.21	.01
	2.19	.35	2.05	.83	1.93	1.23	1.85	1.43	1.75	1.67	1.63	1.80	1.50	1.91	1.37	2.03
	1.21	2.14	.97	2.20												
30	19.56															
467	0	-2.16	.33	-2.14	.81	-2.00	1.38	-1.67	1.75	-1.28	2.14	-.51	2.21	0	2.21	.01
	2.19	.35	2.11	.75	2.05	1.03	2.03	1.22	2.00	1.37	1.98	1.53	1.97	1.71	1.93	1.83
	1.86	1.93	1.70	1.99	1.47	2.03	1.30	2.09	1.10	2.19	.83	2.21				
31	20.78															
489	0	-2.15	.32	-2.13	.75	-2.02	1.20	-1.80	1.65	-1.42	1.91	-1.06	2.13	-.53	2.21	0
	2.21	.01	2.20	.29	2.18	.64	2.14	1.05	2.13	1.38	2.13	1.50	2.16	1.63	2.25	1.74
	2.46	1.81	2.71	1.89	2.91	1.97	3.01	1.99	2.99	2.00	2.99	2.08	2.88	2.14	2.40	2.19
32	23.22															
513	0	-2.14	.53	-2.08	.98	-1.96	1.39	-1.78	1.70	-1.60	1.91	-1.42	2.05	-1.21	2.15	-.94
	2.20	-.49	2.21	0	2.21	.01	2.21	.51	2.21	.88	2.21	1.31	2.21	1.42	2.25	1.53
	2.33	1.55	3.02	1.63	3.75	1.74	4.40	1.87	4.97	2.00	5.34	2.13	5.48	2.20	5.54	2.22
	5.50	2.30	5.29	2.35	4.91	2.37										

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MODEL GEOMETRY OF MDAC-B SIDE SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
33	28.11															
540	0	-1.75	.64	-1.72	1.30	-1.67	1.72	-1.63	1.93	-1.55	2.07	-1.44	2.14	-1.31	2.19	-1.17
	2.19	-.93	2.20	-.46	2.21	0	2.21	.01	2.24	.48	2.24	.97	2.25	1.30	2.26	1.50
	2.24	1.60	2.29	1.66	3.10	1.70	4.03	1.76	5.78	1.91	6.97	2.08	7.65	2.24	7.90	2.32
	8.04	2.42	8.03	2.46	7.92	2.48	7.72	2.49	7.46	2.51	7.15	2.51				
34	28.97															
570	0	-1.61	.92	-1.59	1.69	-1.58	1.92	-1.55	2.13	-1.39	2.18	-1.19	2.19	-1.03	2.19	-.60
	2.20	0	2.20	.01	2.21	.50	2.22	1.11	2.22	1.33	2.20	1.50	2.21	1.67	2.22	1.72
	2.81	1.75	6.12	1.82	5.40	1.89	6.61	1.99	7.69	2.14	8.38	2.27	8.69	2.40	8.86	2.44
	8.42	2.54	8.85	2.54	8.67	2.55	8.30	2.57								
35	29.58															
598	3.29	1.85	4.36	1.87	6.03	1.96	7.59	2.09	8.75	2.27	9.33	2.41	9.68	2.47	9.55	2.58
	9.53	2.64														
36	30.56															
607	5.23	1.98	6.49	2.03	8.18	2.15	9.24	2.26	9.41	2.29	9.51	2.32	9.59	2.38	9.69	2.57
	9.85	2.90	10.00	3.26	10.07	3.48	10.08	3.56								
37	31.78															
619	7.58	2.15	8.41	2.19	9.25	2.25	9.39	2.26	9.52	2.30	9.62	2.42	9.75	2.68	10.02	3.15
	10.28	3.62	10.52	4.12	10.71	4.57	10.73	4.68	10.74	4.75						
38	32.08															
632	8.14	2.20	8.64	2.22	9.15	2.25	9.36	2.26	9.52	2.31	9.61	2.43	9.81	2.80	10.13	3.36
	10.39	3.84	10.68	4.42	10.84	4.83	10.89	4.95	10.90	5.04						
39	32.69															
645	9.44	2.33	9.53	2.40	9.62	2.53	9.95	3.10	10.27	3.67	10.62	4.31	10.89	4.83	10.95	4.93
	10.95	4.99														
40	33.00															
654	9.84	2.95	10.08	3.36	10.35	3.85	10.61	4.31	10.83	4.73	10.95	4.94				
41	33.37															
660	10.34	3.86	10.57	4.28	10.78	4.64	10.88	4.84	10.93	4.94						
42	33.73															
665	10.90	4.95														

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MODEL GEOMETRY OF MDAC-DNO BOTTOM SURFACE - DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
1	.30															
1	-.35	-.18	-.29	-.21	-.20	-.23	-.09	-.24	0	-.26	.10	-.23	.20	-.28	.30	-.15
	.35	-.11														
2	.40															
10	-.39	-.19	-.29	-.23	-.19	-.25	-.09	-.26	0	-.26	.09	-.25	.19	-.23	.30	-.19
	.40	-.13														
3	.50															
19	-.44	-.19	-.40	-.22	-.29	-.25	-.19	-.27	-.09	-.27	0	-.27	.10	-.27	.19	-.25
	.30	-.21	.40	-.17	.45	-.13										
4	.60															
30	-.49	-.19	-.39	-.24	-.29	-.27	-.19	-.28	-.09	-.28	0	-.28	.09	-.28	.20	-.26
	.30	-.24	.49	-.20	.50	-.13										
5	.70															
41	-.54	-.18	-.50	-.22	-.39	-.25	-.29	-.28	-.19	-.29	-.10	-.30	0	-.30	.10	-.29
	.20	-.28	.38	-.26	.40	-.22	.50	-.17	.55	-.12						
6	.80															
54	-.55	-.21	-.50	-.23	-.40	-.27	-.30	-.29	-.19	-.30	-.10	-.31	0	-.31	.10	-.30
	.20	-.29	.38	-.27	.40	-.24	.50	-.20	.55	-.17						
7	1.00															
67	-.65	-.18	-.59	-.22	-.50	-.26	-.24	-.32	0	-.33	.24	-.31	.50	-.25	.60	-.19
	.65	-.15														
8	1.60															
76	-.79	-.21	-.74	-.25	-.49	-.34	-.24	-.38	0	-.39	.25	-.38	.50	-.34	.75	-.24
	.80	-.21														
9	2.20															
85	-.95	-.23	-.84	-.30	-.74	-.34	-.50	-.41	-.24	-.44	0	-.45	.24	-.44	.50	-.41
	.75	-.34	.88	-.32	.94	-.23										
10	2.80															
94	-1.04	-.27	-1.00	-.31	-.74	-.41	-.49	-.46	-.24	-.49	0	-.50	.25	-.49	.50	-.46
	.74	-.40	1.00	-.29	1.05	-.26										
11	3.40															
107	-1.14	-.29	-1.09	-.33	-.99	-.38	-.74	-.46	-.49	-.51	0	-.54	.50	-.50	.75	-.48
	1.00	-.36	1.10	-.31	1.15	-.27										
12	4.00															
118	-1.29	-.29	-1.24	-.32	-.99	-.44	-.49	-.56	0	-.59	.50	-.55	1.00	-.43	1.25	-.31
	1.30	-.27														

AEDC-TARO, INC., ARNOLD AFS, TENNESSEE
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MODEL GEOMETRY OF HOAC-DNO BOTTOM SURFACE - DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
13	4.60															
127	-1.40	-0.29	-1.34	-0.33	-1.25	-0.38	-1.00	-.48	-.49	-0.59	0	-0.62	.50	-0.59	1.00	-0.50
	1.25	-.38	1.39	-0.32	1.40	-.29										
14	5.20															
138	-1.49	-0.29	-1.26	-.43	-1.00	-.52	-.49	-.63	0	-.66	.50	-.63	1.00	-.52	1.25	-0.50
	1.50	-.30														
15	5.80															
147	-1.60	-.30	-1.58	-.37	-1.00	-.56	-.49	-.67	0	-.69	.50	-.68	1.00	-.56	1.50	-0.30
	1.60	-.31														
16	6.40															
156	-1.64	-.35	-1.49	-.43	-.99	-.60	-.50	-.70	0	-.72	.50	-.69	1.00	-.60	1.50	-0.40
	1.65	-.35														
17	7.00															
165	-1.75	-.35	-1.50	-.48	-.99	-.63	-.49	-.72	0	-.74	.50	-.71	1.00	-.63	1.50	-.48
	1.75	-.35														
18	8.00															
174	-1.80	-.37	-1.74	-.43	-1.49	-.53	-.99	-.67	-.50	-.74	0	-.75	.50	-.74	1.00	-.67
	1.50	-.54	1.75	-.49	1.85	-.37										
19	8.60															
185	-1.85	-.34	-1.84	-.40	-1.74	-.45	-1.50	-.56	-1.00	-.69	-.49	-.74	0	-.75	.50	-.74
	1.00	-.69	1.50	-.56	1.75	-.46	1.85	-.41	1.95	-.34						
20	9.20															
198	-2.00	-.34	-1.75	-.47	-1.49	-.57	-1.24	-.65	-1.04	-.70	-.94	-.71	-.85	0.73	-.75	-.73
	-.49	-.74	0	-.74	.50	-.74	.75	-.73	.85	-.72	.95	-.71	1.05	-.70	1.25	-.65
	1.50	-0.58	1.75	-.49	2.00	-0.35										
21	9.80															
217	-2.10	-.29	-2.00	-.36	-1.75	-.49	-1.49	-.59	-1.30	-.65	-1.19	-.69	-1.09	-.70	-1.04	-.70
	-.94	-.72	-.85	-.73	-.74	-.73	-.50	-.74	0	-.74	.50	-.73	.75	-.73	.85	-.72
	.95	-.72	1.04	-.71	1.10	-.70	1.20	-.68	1.29	-.65	1.50	-.60	1.75	-.51	2.00	-.38
	2.09	-.31														
22	10.40															
242	-2.15	-.35	-2.00	-.39	-1.74	-.51	-1.50	-.60	-1.34	-.65	-1.24	-.67	-1.14	-.69	-1.04	-.71
	-.94	-.72	-.85	-.73	-.74	-.73	-.49	-.73	0	-.73	.50	-.73	.75	-.73	.85	-.72
	.95	-.72	1.04	-.71	1.15	-.70	1.25	-.68	1.34	-.66	1.50	-.62	1.75	-.53	2.00	-.42
	2.15	-.32														
23	11.00															
267	-2.25	-.27	-2.00	-.43	-1.74	-.54	-1.50	-.63	-1.30	-.68	-1.19	-.70	-1.09	-.71	-0.99	-0.72
	-.99	-.73	-.49	-.73	0	-.73	.50	-.72	.90	-0.72	1.00	-.72	1.10	-.71	1.20	-.70
	1.30	-.68	1.50	-.64	1.75	-.56	2.00	-.45	2.25	-0.30						

AEDC-TARO-INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH TYPE A SONIC TUNNEL B
VT1162 B00

MODEL GEOMETRY OF MDAC-DWG BOTTOM SURFACE - DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
24	12.00															
288	-2.49	-.19	-2.25	-.37	-2.00	-.69	-1.74	-.59	-1.65	-.63	-1.55	-.66	-1.45	-.68	-1.34	-.70
	-1.24	-.71	-1.00	-.72	-.50	-.72	0	-.72	.50	-.72	1.00	-.71	1.25	-.71	1.35	-.70
	1.45	-.68	1.55	-.66	1.65	-.63	1.75	-.60	2.00	-.51	2.25	-.38	2.50	-.22		
25	13.00															
311	-2.74	-.17	-2.50	-.33	-2.25	-.45	-2.00	-.55	-1.75	-.64	-1.44	-.67	-1.54	-.69	-1.44	-.71
	-1.35	-.72	-1.24	-.72	-.99	-.72	-.50	-.72	0	-.72	.50	-.72	1.00	-.71	1.25	-.71
	1.35	-.71	1.45	-.70	1.55	-.69	1.65	-.67	1.75	-.64	1.99	-.56	2.25	-.46	2.50	-.34
	2.75	-.19														
26	14.00															
336	-2.75	-.03	-3.00	-.20	-2.75	-.31	-2.49	-.41	-2.24	-.51	-2.00	-.60	-1.89	-.63	-1.80	-.66
	-1.69	-.69	-1.60	-.71	-1.50	-.71	-1.30	-.72	-1.00	-.71	-.50	-.71	0	-.71	.50	-.71
	1.90	-.71	1.40	-.71	1.50	-.71	1.60	-.70	1.70	-.69	1.80	-.67	1.98	-.64	2.00	-.61
	2.25	-.53	2.50	-.44	2.75	-.33	3.00	-.22	3.25	-.07						
27	15.00															
365	-3.74	-.02	-3.49	-.15	-2.99	-.33	-2.50	-.50	-2.24	-.57	-2.00	-.64	-1.90	-.67	-1.79	-.69
	-1.70	-.70	-1.59	-.71	-1.49	-.71	-.99	-.71	-.49	-.71	0	-.71	.50	-.71	1.00	-.71
	1.50	-.71	1.60	-.71	1.70	-.71	1.79	-.70	1.90	-.68	2.00	-.66	2.25	-.59	2.50	-.52
	3.00	-.37	3.50	-.18	3.75	-.05										
28	16.00															
392	-4.50	.09	-4.44	.05	-4.34	0	-4.25	-.05	-3.99	-.14	-3.50	-.29	-3.00	-.42	-2.50	-.55
	-2.15	-.64	-2.04	-.66	-1.94	-.68	-1.85	-.69	-1.74	-.70	-1.49	-.70	-1.00	-.70	-.49	-.70
	0	-.70	.50	-.70	1.00	-.70	1.50	-.71	1.75	-.71	1.85	-.70	1.95	-.69	2.05	-.67
	2.14	-.65	2.50	-.56	3.00	-.44	3.50	-.30	4.00	-.30	4.00	-.15	4.25	-.06	4.35	-.02
	4.45	.03	4.50	.06												
29	17.00															
426	-5.20	.16	-5.00	.08	-4.99	.03	-4.50	-.13	-4.00	-.25	-3.49	-.37	-2.99	-.48	-2.49	-.59
	-2.24	-.64	-2.14	-.66	-2.04	-.68	-1.94	-.69	-1.84	-.70	-1.75	-.70	-1.50	-.70	-1.00	-.70
	-.50	-.69	0	-.69	.50	-.70	1.00	-.70	1.50	-.70	1.75	-.70	1.85	-.70	1.95	-.69
	2.05	-.67	2.15	-.66	2.50	-.60	3.00	-.49	3.50	-.37	4.00	-.25	4.50	-.12	5.00	.03
	5.10	.07	5.20	.13												
30	18.00															
460	-5.70	.15	-5.60	.09	-5.50	.05	-5.00	-.08	-4.50	-.19	-4.00	-.30	-3.50	-.39	-3.00	-.49
	-2.50	-.59	-2.25	-.63	-2.15	-.65	-2.05	-.67	-1.95	-.68	-1.85	-.69	-1.75	-.69	-1.50	-.69
	-1.00	-.69	-.50	-.69	0	-.69	.50	-.69	1.00	-.70	1.50	-.70	1.75	-.70	1.85	-.70
	1.95	-.69	2.05	-.68	2.15	-.66	2.25	-.64	2.50	-.60	3.00	-.51	3.50	-.41	4.00	-.31
	4.50	-.20	5.00	-.09	5.50	.04	5.60	.07	5.70	.12						
31	19.00															
497	-4.00	.16	-5.50	-.01	-5.00	-.11	-4.50	-.20	-4.00	-.28	-3.50	-.37	-3.00	-.45	-2.50	-.54
	-2.00	-.61	-1.75	-.65	-1.50	-.67	-1.00	-.67	-.50	-.67	0	-.67	.50	-.67	1.00	-.67
	1.50	-.67	1.75	-.67	2.00	-.63	2.50	-.55	3.00	-.47	3.50	-.39	4.00	-.30	4.50	-.21
	5.00	-.12	5.50	-.02	6.00	.11										

AEDC-TARO, INC., ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162 B00

MODEL GEOMETRY OF MDAC-OWO BOTTOM SURFACE - DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
32	20.00															
524	-6.20	.18	-6.12	.14	-6.00	.10	-5.50	.01	-5.00	-.06	-4.50	-.14	-4.00	-.22	-3.50	-.30
	-3.00	-.37	-2.50	-.45	-2.00	-.53	-1.50	-.60	-1.25	-.61	-1.00	-.61	-.50	-.61	0	-.61
	.50	-.61	1.00	-.62	1.25	-.62	1.50	-.61	2.00	-.54	2.50	-.45	3.00	-.37	3.50	-.30
	4.00	-.29	4.50	-.13	5.00	-.05	5.50	.02	6.00	.11	6.12	.13	6.20	.18		
33	21.00															
525	-6.25	.22	-6.00	.19	-5.50	.11	-5.00	.04	-4.50	-.02	-4.00	-.10	-3.50	-.17	-3.00	-.25
	-2.50	-.32	-2.00	-.40	-1.50	-.48	-1.25	-.51	-1.00	-.53	-.50	-.53	0	-.53	.50	-.51
	1.00	-.53	1.25	-.53	1.50	-.49	2.00	-.41	2.50	-.33	3.00	-.26	3.50	-.18	4.00	-.10
	4.50	-.02	5.00	.04	5.50	.12	6.00	.19	6.25	.22						
34	21.25															
584	-6.00	.22	-5.50	.14	-5.00	.07	-4.50	0	-3.99	-.07	-3.50	-.14	-3.00	-.21	-2.50	-.29
	-2.00	-.36	-1.50	-.44	-1.25	-.47	-1.00	-.49	-.50	-.49	0	-.49	.50	-.50	1.00	-.50
	1.25	-.48	1.50	-.45	2.00	-.38	2.50	-.30	3.00	-.23	3.50	-.15	4.00	-.07	4.50	0
	5.00	.07	5.50	.15	6.00	.22										

AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL H
VT1162 H00

MODEL GEOMETRY OF H0AC-0B0 - SIDE SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
1	0															
1	0	0														
2	.10															
2	0	-.18	.10	-.17	.14	-.15	.20	-.10	.22	0	.20	.06	.16	.12	0	.18
3	.20															
10	0	-.23	.10	-.21	.20	-.17	.25	-.15	.31	-.02	.28	.07	.20	.17	.10	.22
	0	.23														
4	.30															
19	0	-.23	.10	-.23	.23	-.20	.34	-.13	.38	-.03	.37	.05	.32	.13	.21	.22
	.11	.26	0	.28												
5	.40															
29	0	-.25	.11	-.24	.24	-.22	.37	-.16	.42	-.09	.44	-.03	.42	.03	.36	.13
	.28	.21	.18	.27	.10	.30	0	.31								
6	.50															
41	0	-.25	.14	-.25	.28	-.24	.41	-.17	.47	-.11	.50	-.01	.49	.01	.44	.11
	.32	.23	.20	.30	.12	.33	0	.35								
7	.70															
53	0	-.28	.13	-.28	.31	-.26	.42	-.22	.51	-.17	.57	-.10	.58	-.03	.54	.09
	.46	.19	.36	.29	.25	.35	.18	.38	.08	.40	0	.41				
8	1.00															
67	0	-.32	.17	-.31	.34	-.28	.56	-.22	.65	-.15	.69	-.05	.67	.01	.61	.13
	.20	.26	.35	.39	.14	.47	.08	.50	0	.51						
9	1.50															
80	0	-.37	.22	-.37	.49	-.33	.71	-.25	.80	-.18	.84	-.09	.81	0	.73	.16
	.65	.27	.53	.40	.39	.53	.20	.63	.10	.67	0	.68				
10	2.00															
94	0	-.42	.18	-.42	.38	-.40	.58	-.37	.75	-.31	.86	-.25	.94	-.19	.96	-.11
	.95	-.06	.88	.02	.76	.29	.65	.44	.49	.61	.36	.71	.23	.79	.16	.82
	.38	.85	0	.85												
11	2.50															
112	0	-.47	.17	-.47	.44	-.44	.75	-.37	.96	-.27	1.04	-.21	1.07	-.13	1.05	-.04
	.58	.15	.88	.28	.78	.44	.62	.65	.44	.83	.26	.95	.09	1.02	0	1.02
12	3.00															
128	0	-.50	.22	-.50	.45	-.48	.72	-.42	.97	-.33	1.09	-.26	1.15	-.20	1.17	-.15
	1.10	-.08	1.07	.04	.99	.20	.84	.45	.75	.66	.58	.87	.42	1.02	.23	1.14
	.13	1.18	0	1.18												

AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VITIO2 M00

MODEL GEOMETRY OF MDAC-D&C - SIDE SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
13	3.50															
146	0	-.54	.22	-.54	.57	-.50	.89	-.42	1.12	-.32	1.21	-.26	1.25	-.22	1.27	-.16
	1.26	-.47	1.11	.21	.95	.31	.75	.85	.52	1.11	.32	1.27	.20	1.33	0	1.37
14	4.00															
162	0	-.57	.19	-.57	.48	-.55	.78	-.49	1.04	-.41	1.24	-.32	1.33	-.25	1.37	-.18
	1.34	-.11	1.25	.09	1.16	.29	1.06	.51	.91	.79	.72	1.07	.53	1.30	.20	1.48
	.10	1.54	0	1.55												
15	4.50															
180	0	-.56	.29	-.56	.70	-.54	1.10	-.43	1.33	-.32	1.42	-.25	1.45	-.18	1.49	-.11
	1.36	.33	1.26	.27	1.11	.58	.97	.89	.79	1.18	.52	1.50	.23	1.68	0	1.72
16	5.00															
196	0	-.64	.42	-.62	.87	-.54	1.30	-.39	1.50	-.28	1.53	-.21	1.50	-.11	1.37	.19
	1.20	.58	1.02	1.00	.78	1.40	.50	1.71	.34	1.81	.18	1.88	0	1.90		
17	6.00															
211	0	-.70	.63	-.65	1.19	-.52	1.50	-.40	1.65	-.31	1.68	-.25	1.62	-.10	1.43	.34
	1.21	.91	.96	1.46	.65	1.90	.36	2.14	.17	2.22	0	2.25				
18	7.00															
225	0	-.73	.54	-.71	1.11	-.60	1.54	-.46	1.71	-.38	1.78	-.32	1.82	-.24	1.78	-.16
	1.07	.81	1.57	.25	1.42	.68	1.28	1.10	1.09	1.60	.78	2.15	.47	2.45	.19	2.59
	0	2.61														
19	7.45															
242	0	-.73	.55	-.72	1.21	-.59	1.57	-.48	1.80	-.36	1.87	-.28	1.88	-.23	1.84	-.17
	1.14	-.42	1.60	.26	1.36	.68	1.35	1.07	1.21	1.50	.46	2.07	.64	2.47	.35	2.68
	.15	2.75	0	2.77												
20	7.60															
260	0	-.74	.62	-.70	1.21	-.60	1.68	-.44	1.84	-.34	1.90	-.23	1.83	-.12	1.69	.09
	1.02	.27	1.50	.62	1.31	1.20	1.11	1.83	.87	2.29	.59	2.58	.42	2.73	.32	2.82
	.16	2.91	0	2.94												
21	7.80															
278	0	-.74	.65	-.72	1.31	-.54	1.72	-.43	1.87	-.33	1.92	-.21	1.88	-.15	1.76	0
	1.05	.23	1.53	.56	1.37	1.19	1.13	1.86	.82	2.42	.58	2.65	.47	2.75	.37	2.90
	.21	3.00	0	3.05												
22	8.00															
296	0	-.74	.53	-.73	1.19	-.63	1.62	-.49	1.83	-.38	1.92	-.31	1.95	-.22	1.89	-.14
	1.18	0	1.66	.24	1.56	.51	1.35	1.28	1.14	1.90	.90	2.39	.68	2.62	.49	2.80
	.95	2.88	.26	3.03	0	3.10										
23	8.20															
315	0	-.74	.57	-.73	1.38	-.67	1.56	-.53	1.80	-.42	1.97	-.30	2.01	-.19	1.99	-.17
	1.57	-.14	1.75	.13	1.62	.41	1.44	1.07	1.29	1.84	1.11	2.19	.79	2.67	.52	2.92
	.38	3.08	.20	3.14	.10	3.16	0	3.16								

AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL G
V11102 H00

MODEL GEOMETRY OF MDAC-UAC - SIDE SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	A Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
24	9.60																	
335	0	-.73	.58	-.73	1.14	-.66	1.55	-.55	1.90	-.39	2.01	-.31	2.07	-.19	2.01	-.12
	1.09	0	1.73	.25	1.01	-.91	1.49	.98	1.31	1.72	1.12	2.35	.89	2.71	.63	2.95
	.45	3.09	.25	3.17	0	3.20										
25	10.00																	
354	0	-.72	.57	-.72	1.10	-.69	1.53	-.58	1.89	-.44	2.13	-.29	2.18	-.17	2.13	-.09
	1.04	.06	1.78	.27	1.03	.50	1.51	.96	1.36	1.63	1.17	2.33	.89	2.86	.58	3.09
	.37	3.17	.17	3.21	0	3.22										
26	11.00																	
373	0	-.71	.72	-.71	1.59	-.61	2.04	-.41	2.29	-.26	2.33	-.13	2.27	-.04	2.05	.09
	1.05	.27	1.68	.58	1.52	.92	1.37	1.60	1.21	2.22	.90	2.85	.52	3.13	.25	3.20
	0	3.23														
27	12.00																	
390	0	-.72	.49	-.71	1.28	-.69	1.83	-.56	2.25	-.36	2.49	-.20	2.55	-.07	2.50	0
	2.25	.10	1.86	.31	1.63	.59	1.49	.98	1.39	1.46	1.23	2.09	1.04	2.62	.81	2.93
	.57	3.10	.32	3.19	.13	3.22	0	3.23								
28	13.00																	
410	0	-.70	.91	-.70	1.48	-.68	2.00	-.53	2.45	-.34	2.77	-.15	2.85	-.04	2.85	.03
	2.46	.14	2.78	.11	2.54	.17	1.55	.39	1.62	.61	1.49	1.01	1.29	1.84	1.12	2.46
	.61	2.43	.36	3.18	0	3.24										
29	14.00																	
429	0	-.72	.84	-.70	1.49	-.70	2.04	-.58	2.59	-.38	3.14	-.12	3.27	-.03	3.32	.06
	3.32	.12	3.25	.18	3.06	.24	2.53	.26	2.36	.29	1.89	.35	1.72	.46	1.61	.63
	1.69	1.15	1.26	1.97	1.09	2.54	.82	2.92	.52	3.13	.24	3.22	0	3.24		
30	15.00																	
452	0	-.70	.84	-.70	1.51	-.70	1.87	-.69	2.41	-.53	2.94	-.36	3.36	-.21	3.65	-.08
	3.61	.01	3.49	.11	3.41	.21	3.82	.28	3.67	.33	3.41	.35	3.04	.36	1.77	.36
	1.67	.46	1.57	.70	1.46	1.17	1.31	1.79	1.15	2.40	.89	2.85	.63	3.07	.33	3.20
	0	3.25														
31	16.00																	
477	0	-.69	.77	-.69	1.43	-.69	1.94	-.67	2.52	-.54	3.30	-.33	4.02	-.11	4.42	.04
	4.53	.12	4.59	.21	4.59	.30	4.55	.33	4.42	.38	4.26	.41	4.13	.42	1.67	.42
	1.60	.61	1.46	1.20	1.35	1.66	1.21	2.21	1.00	2.72	.75	3.00	.45	3.17	.25	3.23
	0	3.24														
32	17.00																	
502	0	-.69	1.11	-.69	1.78	-.69	2.23	-.63	2.86	-.49	3.59	-.32	4.28	-.14	4.99	.06
	5.23	.15	5.28	.27	5.30	.33	5.24	.41	5.07	.46	4.86	.48	1.64	.48	1.53	.89
	1.38	1.52	1.23	2.14	1.05	2.63	.84	2.91	.52	3.14	.27	3.23	0	3.27		
33	17.60																	
525	0	-.69	.93	-.69	1.76	-.69	2.27	-.62	2.88	-.51	3.56	-.37	4.03	-.27	4.70	-.13
	5.44	.15	5.42	.15	5.43	.24	5.36	.31	5.06	.39	5.01	.44	5.69	.50	5.61	.51
	5.43	.52	1.56	.52	1.49	.84	1.35	1.50	1.22	2.06	1.12	2.42	1.00	2.68	.74	3.00
	.42	3.14	.15	3.27	0	3.31										

AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL H
V11162 R00

MODEL GEOMETRY OF R00AC-0MC - SIDE SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	A															
	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
34	19.00															
552	0	-.64	.43	-.66	1.47	-.65	2.12	-.59	2.98	-.44	3.80	-.30	4.66	-.14	5.30	0
	5.62	.12	6.00	.17	6.09	.22	6.13	.29	6.13	.33	6.09	.39	6.01	.46	5.93	.49
	5.68	.50	1.45	.50	1.37	.49	1.30	1.29	1.23	1.08	1.10	2.27	.95	2.72	.71	3.01
	.53	3.14	.23	3.26	.19	3.40	.19	3.89	.17	4.35	.14	4.60	.08	4.79	0	5.03
35	20.00															
584	0	-.61	.44	-.61	1.59	-.50	2.37	-.45	3.28	-.29	4.13	-.15	5.12	0	5.74	.11
	5.10	.15	6.27	.24	6.33	.30	6.33	.37	6.29	.40	6.19	.46	6.12	.47	1.33	.47
	1.20	.67	1.15	1.68	1.19	2.13	.91	2.66	.75	2.94	.53	3.13	.24	3.25	.18	3.30
	.18	3.81	.19	4.46	.19	5.10	.19	5.84	.16	6.14	.11	6.43	.06	6.55	0	6.57
36	20.69															
616	0	-.55	.54	-.59	1.58	-.50	2.60	-.34	3.57	-.22	4.42	-.07	5.29	.06	5.86	.15
	5.26	.29	6.37	.29	6.39	.34	6.35	.39	6.27	.44	6.15	.46	1.30	.46	1.23	.87
	1.12	1.52	1.01	2.16	.88	2.69	.69	2.99	.49	3.15	.26	3.24	.18	3.29	.17	3.77
	.18	4.58	.17	5.49	.17	6.10	.15	6.55	.12	6.72	.10	6.83	.06	6.90	0	6.92
37	21.57															
648	0	-.57	.77	-.57	1.31	-.50	1.56	-.45	2.61	-.34	3.54	-.18	4.33	-.05	5.15	.07
	5.65	.13	6.33	.27	6.43	.34	6.45	.35	6.42	.38	6.37	.42	6.25	.44	1.25	.44
	1.16	.93	1.08	1.54	.98	2.19	.81	2.75	.69	2.97	.60	3.19	.19	3.26	.16	3.27
	.16	3.71	.16	4.52	.16	5.18	.16	6.25	.14	6.81	.11	6.92	0	6.97		
38	20.65															
679	0	-.54	1.09	-.54	1.76	-.45	2.58	-.26	4.05	-.07	5.09	.09	5.84	.20	6.40	.30
	5.46	.32	6.47	.34	6.45	.37	6.39	.40	6.33	.41	.14	3.36	.14	3.75	.14	4.41
	.14	5.38	.14	6.08	.15	6.71	.13	6.88	.10	6.95	0	6.97				
39	21.28															
701	0	-.49	1.14	-.47	1.83	-.37	2.52	-.20	4.05	-.02	4.90	.10	5.54	.21	5.92	.27
	5.14	.34	.12	3.51	.12	3.90	.12	4.61	.12	5.37	.12	5.97	.13	6.53	.12	6.80
	.11	6.91	0	6.96												
40	21.52															
719	.10	3.63	.10	4.05	.11	4.70	.11	5.22	.10	5.72	.11	6.41	.11	6.84	.10	6.89
	0	6.94														
41	21.50															
728	.06	5.17	.07	5.86	.08	6.49	.08	6.83	.04	6.90	0	6.90				
42	22.26															
734	.04	6.82	0	6.83												

AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL H
VT1162 H00

MODEL GEOMETRY OF MDAC-CCU TOP SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
1	0															
1	0	0														
2	.10															
2	-.19	0	-.19	.06	-.13	.11	-.09	.16	0	.21	.15	.16	.20	.09	.23	0
3	.20															
10	-.28	0	-.25	.07	-.19	.16	-.10	.23	0	.26	.14	.23	.22	.17	.28	.07
	.31	0														
4	.30															
19	-.37	0	-.35	.03	-.27	.17	-.15	.27	0	.30	.17	.26	.27	.19	.34	.10
	.36	0														
5	.40															
28	-.42	0	-.40	.02	-.33	.15	-.23	.26	-.12	.32	0	.34	.18	.30	.31	.21
	.40	.12	.44	0												
6	.50															
38	-.46	0	-.43	.00	-.37	.10	-.27	.26	-.13	.35	0	.38	.20	.33	.36	.22
	.45	.11	.49	0												
7	1.00															
44	-.05	-.01	-.04	0	-.00	.09	-.54	.18	-.44	.30	-.33	.40	-.19	.49	0	.53
	.23	.47	.38	.38	.51	.27	.60	.15	.63	.09	.67	0	.68	-.07		
8	1.50															
63	-.08	-.12	-.07	-.04	-.03	.00	-.53	.23	-.41	.34	-.26	.52	-.16	.60	0	.71
	.28	.03	.51	.46	.07	.27	.78	.08	.84	-.06						
9	2.00															
76	-.00	-.10	-.07	0	-.06	.09	-.74	.25	-.62	.42	-.48	.57	-.25	.78	0	.88
	.21	.03	.46	.66	.06	.45	.80	.24	.91	.03	.95	-.10				
10	2.50															
90	-1.02	-.12	-1.02	-.17	-1.00	0	-.97	.02	-.80	.35	-.60	.63	-.41	.83	-.18	.99
	0	1.05	.21	1.00	.39	.99	.61	.68	.77	.46	.87	.29	.97	.11	1.03	0
	1.07	-.13														
11	3.00															
107	-1.12	-.15	-1.08	0	-1.06	.03	-.95	.25	-.85	.45	-.71	.68	-.58	.85	-.47	.97
	-.29	1.11	-.19	1.19	0	1.22	.21	1.18	.41	1.05	.60	.87	.76	.66	.89	.44
	.38	.28	1.04	.15	1.12	0	1.16	-.15								
12	4.00															
127	-1.21	-.18	-1.29	-.10	-1.25	0	-1.16	.19	-1.06	.40	-.91	.71	-.79	.93	-.68	1.10
	-.30	1.12	-.33	1.44	-.18	1.39	0	1.58	.20	1.54	.39	1.43	.59	1.25	.84	.92
	1.12	.39	1.12	.37	1.09	.19	1.24	0	1.35	-.18						

AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL H
V1102 R00

MODEL GEOMETRY OF MDAC-D&D TOP SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
13	5.00															
148	-1.48	-.22	-1.45	-.13	-1.39	0	-1.31	.17	-1.17	.50	-1.00	.89	-.88	1.14	-.70	1.33
	-.48	1.70	-.21	1.87	0	1.93	.26	1.87	.50	1.71	.70	1.50	.94	1.16	1.19	.73
	1.27	.39	1.44	0	1.52	-.22										
14	6.00															
167	-1.63	-.25	-1.57	-.11	-1.50	0	-1.45	.11	-1.39	.27	-1.31	.51	-1.20	.79	-1.06	1.17
	-.67	1.85	-.66	1.87	-.44	2.08	-.23	2.22	0	2.28	.24	2.22	.50	2.05	.75	1.78
	.85	1.87	1.13	1.09	1.28	.78	1.39	.41	1.51	.09	1.55	0	1.63	-.16	1.66	-.25
15	7.00															
191	-1.77	-.26	-1.68	-.09	-1.62	0	-1.51	.26	-1.44	.45	-1.38	.67	-1.30	.91	-1.15	1.36
	-.97	1.79	-.85	2.00	-.55	2.38	-.19	2.60	0	2.63	.24	2.59	.47	2.46	.69	2.26
	.90	1.58	1.08	1.62	1.20	1.33	1.30	1.02	1.40	.70	1.47	.49	1.53	.29	1.67	0
	1.79	-.16	1.80	-.26												
16	7.48															
217	-1.83	-.25	-1.77	-.13	-1.69	0	-1.56	.25	-1.47	.52	-1.37	.85	-1.22	1.38	-1.06	1.81
	-.83	2.21	-.68	2.50	-.18	2.78	0	2.80	.37	2.69	.81	2.29	1.09	1.78	1.27	1.29
	1.80	.84	1.53	.41	1.65	.11	1.71	0	1.82	-.15	1.86	-.25				
17	7.80															
239	-1.85	-.28	-1.79	-.14	-1.69	0	-1.62	.13	-1.53	.36	-1.43	.68	-1.31	1.12	-1.16	1.62
	-.84	2.69	-.73	2.80	-.51	2.82	-.37	2.72	-.25	2.84	-.14	2.91	0	2.96	.19	2.92
	.86	2.53	.42	2.72	.80	2.56	.83	2.33	1.00	2.03	1.14	1.72	1.25	1.39	1.34	1.10
	1.85	.71	1.53	.43	1.62	.19	1.72	0	1.82	-.14	1.87	-.25				
18	7.80															
269	-1.87	-.25	-1.83	-.10	-1.74	-.04	-1.65	.11	-1.56	.32	-1.47	.59	-1.35	1.00	-1.27	1.30
	-1.15	1.84	-1.01	2.05	-.88	2.37	-.63	2.58	-.47	2.71	-.40	2.77	-.32	2.92	-.25	2.98
	-.10	3.06	0	3.08	.14	3.05	.34	2.96	.42	2.86	.46	2.78	.53	2.71	.73	2.53
	.95	2.23	1.12	1.45	1.26	1.43	1.37	1.08	1.47	.72	1.55	.45	1.64	.19	1.76	-.01
	1.84	-.13	1.90	-.24												
19	8.00															
303	-1.89	-.24	-1.86	-.18	-1.78	-.08	-1.68	.09	-1.60	.27	-1.53	.46	-1.43	.78	-1.37	.89
	-1.27	1.33	-1.16	1.75	-1.02	2.10	-.87	2.36	-.65	2.63	-.50	2.76	-.41	2.84	-.35	2.96
	-.28	3.03	-.15	3.10	0	3.13	.15	3.09	.32	3.01	.46	2.90	.68	2.82	.54	2.76
	.68	2.81	.95	2.31	1.11	1.89	1.26	1.51	1.39	1.06	1.51	.62	1.62	.29	1.75	.02
	1.87	-.14	1.92	-.24												
20	8.50															
337	-1.95	-.24	-1.89	-.13	-1.81	-.03	-1.73	.07	-1.64	.24	-1.59	.37	-1.50	.64	-1.40	.99
	-1.32	1.31	-1.24	1.81	-1.11	2.03	-.96	2.40	-.79	2.83	-.59	2.85	-.48	2.95	-.40	3.03
	-.28	3.12	-.19	3.17	0	3.19	.20	3.15	.38	3.06	.48	2.97	.60	2.86	.82	2.65
	1.00	2.91	1.15	2.05	1.26	1.79	1.37	1.24	1.45	.98	1.52	.66	1.62	.37	1.76	.08
	1.88	-.17	1.98	-.23												

AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL H
VIII62 H00

MODEL GEOMETRY OF M0AC-060 TOP SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
21	9.00															
371	-2.02	-.26	-1.97	-.15	-1.89	-.06	-1.79	.06	-1.68	.24	-1.60	.40	-1.52	.64	-1.44	.94
	-1.33	1.35	-1.25	1.67	-1.13	1.93	-1.07	2.29	-.83	2.74	-.63	2.95	-.44	3.10	-.17	3.21
	0	3.22	.26	3.18	.54	3.09	.84	2.76	1.11	2.35	1.28	1.77	1.41	1.26	1.50	.83
	1.03	.41	1.27	.14	1.43	-.03	2.02	-.15	2.04	-.23						
22	10.00															
400	-2.13	-.23	-2.10	-.15	-1.95	0	-1.83	.13	-1.74	.25	-1.63	.44	-1.54	.66	-1.44	1.03
	-1.36	1.33	-1.24	1.66	-1.11	2.04	-.96	2.71	-.72	2.99	-.48	3.14	-.22	3.22	0	3.24
	.30	3.21	.60	3.09	.89	2.83	1.09	2.52	1.19	2.23	1.31	1.74	1.40	1.37	1.48	1.03
	1.56	.71	1.84	.40	1.89	.19	1.99	0	2.09	-.08	2.16	-.19				
23	11.00															
430	-2.29	-.18	-2.20	-.04	-2.07	.04	-1.95	.13	-1.78	.29	-1.66	.44	-1.57	.61	-1.51	.79
	-1.44	1.25	-1.35	1.43	-1.24	1.87	-1.13	2.32	-1.00	2.65	-.77	2.95	-.50	3.13	-.25	3.22
	0	3.25	.34	3.20	.74	3.00	1.01	2.69	1.18	2.24	1.31	1.74	1.40	1.33	1.46	1.08
	1.52	.83	1.61	.59	1.84	.42	1.85	.23	2.02	.10	2.19	-.01	2.28	-.08	2.30	-.17
24	12.00															
462	-2.32	-.12	-2.51	-.06	-2.46	0	-2.35	.06	-2.21	.11	-2.08	.16	-1.89	.27	-1.77	.37
	-1.66	.82	-1.54	.71	-1.45	1.01	-1.37	1.34	-1.29	1.70	-1.21	2.03	-1.11	2.38	-1.00	2.65
	-.66	2.96	-.46	3.05	-.28	3.22	0	3.25	.35	3.20	.68	3.04	.90	2.83	1.09	2.52
	1.22	2.12	1.43	1.63	1.63	1.22	1.49	.92	1.55	.73	1.63	.56	1.76	.40	1.94	.25
	2.13	.16	2.32	.09	2.44	.04	2.51	-.01	2.53	-.07						
25	13.00															
499	-2.65	-.05	-2.81	.05	-2.71	.11	-2.61	.14	-2.41	.18	-2.26	.21	-2.10	.24	-1.92	.30
	-1.63	.36	-1.72	.44	-1.53	.55	-1.49	.85	-1.42	1.15	-1.29	1.68	-1.20	2.08	-1.07	2.50
	-.39	2.71	-.13	3.00	-.07	3.10	-.20	3.24	0	3.26	.32	3.21	.64	3.07	.91	2.82
	1.65	2.54	1.16	2.27	1.27	1.87	1.40	1.32	1.49	.92	1.56	.70	1.65	.53	1.84	.36
	2.09	.26	2.32	.21	2.40	.10	2.73	.12	2.81	.07	2.84	-.01				
26	14.00															
537	-3.32	.05	-3.24	.18	-3.12	.23	-2.85	.27	-2.62	.28	-2.40	.29	-2.17	.30	-1.99	.32
	-1.98	.45	-1.73	.43	-1.64	.53	-1.58	.63	-1.52	.79	-1.45	1.03	-1.38	1.36	-1.31	1.67
	-1.24	1.95	-1.12	2.39	-1.01	2.67	-.81	2.93	-.54	3.13	-.24	3.23	0	3.26	.41	3.19
	.74	3.03	1.06	2.57	1.21	2.19	1.31	1.71	1.42	1.24	1.49	.91	1.57	.68	1.68	.49
	1.50	.36	1.49	.32	2.31	.27	2.79	.29	3.02	.25	3.15	.22	3.23	.18	3.28	.13
	3.30	.27														
27	15.00															
578	-3.98	.14	-3.86	.25	-3.76	.30	-3.57	.34	-3.31	.35	-2.85	.35	-2.49	.34	-2.17	.33
	-1.90	.34	-1.74	.40	-1.63	.52	-1.54	.73	-1.42	1.17	-1.31	1.66	-1.19	2.11	-1.10	2.45
	-1.00	2.82	-.68	2.86	-.69	3.03	-.48	3.16	-.23	3.24	0	3.27	.20	3.23	.53	3.13
	.83	2.91	1.01	2.67	1.13	2.37	1.27	1.83	1.37	1.42	1.46	1.04	1.53	.74	1.60	.54
	1.71	.37	1.49	.32	2.20	.31	2.60	.34	3.05	.36	3.56	.35	3.74	.30	3.84	.24
	3.97	.19														

AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162 M00

MODEL GEOMETRY OF MUAC-080 TOP SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
28	16.00															
619	-4.00	.24	-4.53	.34	-4.46	.30	-4.31	.41	-4.03	.42	-3.47	.40	-3.01	.37	-2.00	.33
	-2.16	.31	-1.96	.29	-1.82	.30	-1.73	.33	-1.66	.39	-1.61	.49	-1.57	.61	-1.47	1.05
	-1.33	1.57	-1.21	2.06	-1.11	2.43	-1.01	2.68	-.82	2.93	-.52	3.14	-.23	3.25	0	3.20
	.15	3.22	.64	3.08	.88	2.80	1.13	2.41	1.29	1.80	1.40	1.32	1.53	.80	1.60	.52
	1.66	.34	1.72	.33	1.87	.29	2.20	.29	2.68	.34	3.28	.39	3.74	.42	4.06	.42
	4.32	.48	4.47	.38	4.52	.38	4.57	.25								
29	17.00															
663	-5.29	.31	-5.25	.39	-5.19	.42	-5.05	.47	-4.88	.49	-4.49	.48	-3.94	.43	-3.33	.37
	-2.41	.31	-2.36	.28	-2.01	.23	-1.79	.21	-1.72	.24	-1.67	.28	-1.60	.46	-1.40	.96
	-1.30	1.72	-1.16	2.28	-1.02	2.66	-.78	2.97	-.53	3.14	-.23	3.26	0	3.28	.34	3.22
	.02	3.14	.89	2.85	1.09	2.51	1.23	2.03	1.37	1.45	1.40	.22	1.49	.95	1.60	.50
	1.65	.36	1.69	.27	1.97	.22	2.54	.29	3.20	.36	3.71	.41	4.28	.46	4.63	.47
	4.83	.48	5.11	.45	5.21	.40	5.26	.30								
30	18.00															
707	-5.81	.33	-5.75	.43	-5.66	.48	-5.37	.52	-5.14	.51	-4.81	.48	-4.11	.39	-3.51	.31
	-2.85	.28	-1.96	.10	-1.81	.08	-1.72	.08	-1.66	.09	-1.64	.12	-1.58	.28	-1.54	.44
	-1.45	.93	-1.33	1.46	-1.22	1.93	-1.10	2.37	-.94	2.74	-.68	3.03	-.41	3.20	-.17	3.27
	0	3.31	.27	3.25	.60	3.04	.85	2.87	1.05	2.52	1.22	1.96	1.34	1.43	1.44	.91
	1.53	.59	1.59	.22	1.62	.14	1.67	.11	1.77	.10	2.15	.14	2.73	.22	3.62	.34
	4.15	.43	4.74	.47	5.09	.50	5.52	.51	5.68	.47	5.77	.40	5.79	.31		
31	18.76															
754	-5.84	.34	-5.79	.42	-5.67	.49	-5.54	.51	-5.32	.52	-5.01	.50	-4.57	.44	-4.07	.38
	-3.54	.31	-2.96	.24	-2.36	.15	-1.92	.09	-1.71	.06	-1.65	.08	-1.63	.11	-1.60	.18
	-1.53	.34	-1.48	.78	-1.36	1.30	-1.24	1.89	-1.12	2.30	-.97	2.68	-.77	2.95	-.47	3.17
	-.22	3.26	-.06	3.30	0	3.34	.06	3.30	.28	3.24	.62	3.07	.91	2.77	1.13	2.27
	1.29	1.55	1.39	1.11	1.49	.62	1.55	.32	1.60	.15	1.67	.09	1.75	.09	2.39	.17
	3.31	.29	4.08	.39	4.76	.47	5.13	.51	5.45	.52	5.61	.50	5.78	.41	5.82	.32
32	19.00															
802	-6.09	.35	-6.06	.41	-5.96	.47	-5.80	.51	-5.55	.50	-5.14	.45	-4.42	.35	-3.62	.23
	-2.32	.13	-2.11	.01	-1.70	-.05	-1.56	-.06	-1.53	-.04	-1.50	.04	-1.45	.26	-1.38	.66
	-1.29	1.16	-1.18	1.76	-1.02	2.43	-.81	2.85	-.59	3.08	-.37	3.21	-.22	3.26	-.15	3.31
	-.14	3.48	-.12	3.87	-.10	4.32	-.07	4.68	-.04	4.80	0	4.87	.06	4.80	.11	4.63
	.15	4.29	.16	3.44	.16	3.83	.17	3.31	.20	3.27	.30	3.24	.58	3.10	.85	2.83
	1.03	2.41	1.16	1.81	1.25	1.37	1.34	.88	1.43	.34	1.50	.01	1.54	-.02	1.62	-.05
	1.75	-.19	2.48	.06	3.20	.17	3.96	.28	4.65	.38	5.24	.47	5.55	.50	5.75	.50
	5.99	.47	6.03	.40	6.07	.33	6.04	.29								
33	20.00															
862	-6.30	.39	-6.27	.46	-6.18	.51	-5.98	.52	-5.67	.45	-4.82	.34	-3.89	.20	-2.98	.05
	-2.08	-.38	-1.48	-.17	-1.42	-.17	-1.38	-.12	-1.33	.13	-1.25	.60	-1.13	1.30	-.97	2.07
	-.80	2.81	-.55	3.13	-.31	3.20	-.17	3.32	-.11	4.76	-.11	4.04	-.11	3.43	-.11	3.36
	-.09	5.82	-.16	6.29	-.04	6.45	0	6.61	.07	6.54	.10	6.39	.13	6.13	.14	3.33
	.14	3.51	.15	4.02	.15	4.07	.15	5.59	.16	3.29	.25	3.25	.41	3.19	.61	3.05
	.81	2.82	.45	2.37	1.05	1.80	1.16	1.21	1.21	.97	1.31	.34	1.39	-.07	1.42	-.12
	1.30	-.19	2.13	-.05	3.05	.08	3.89	.22	4.80	.36	5.48	.46	5.91	.52	6.10	.52
	6.24	.38	6.28	.37												

AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL H
VT1162 H00

MODEL GEOMETRY OF MDAC-D&O TOP SURFACE - ALL DIMENSIONS IN INCHES - 27 JAN 72

STA NO. / POINT NO.	X / Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
34	20.24															
920	-6.36	.42	-6.29	.49	-6.19	.51	-6.06	.51	-5.78	.47	-5.33	.40	-4.92	.33	-4.38	.25
	-3.74	.14	-2.90	0	-2.21	-.09	-1.62	-.19	-1.44	-.21	-1.38	-.18	-1.35	-.10	-1.33	.03
	-1.29	.27	-1.20	.41	-1.07	1.44	-1.00	1.89	-.91	2.35	-.79	2.83	-.54	3.14	-.33	3.26
	-.18	4.31	-.13	3.35	-.12	5.01	-.12	4.34	-.12	3.73	-.12	3.40	-.11	5.73	-.09	6.34
	-.05	6.82	-.03	6.93	0	6.99	.05	6.94	.09	6.79	.12	3.38	.12	3.60	.13	4.03
	.13	4.01	.13	5.22	.13	5.83	.13	6.36	.14	3.35	.21	3.32	.40	3.25	.61	3.09
	.83	2.73	.93	2.34	1.02	1.83	1.10	1.33	1.20	.73	1.27	.29	1.34	-.12	1.40	-.17
	1.47	-.17	2.17	-.07	2.99	.05	4.07	.22	5.01	.37	5.58	.46	5.95	.50	6.12	.51
	6.23	.47	6.28	.44	6.31	.38										
35	20.56															
987	-6.44	.41	-6.39	.49	-6.31	.50	-6.12	.48	-5.69	.41	-5.04	.31	-4.10	.16	-3.19	.01
	-2.21	-.13	-1.49	-.25	-1.38	-.25	-1.35	-.22	-1.32	-.07	-1.23	.42	-1.18	.77	-1.09	1.28
	-.92	2.03	-.81	2.68	-.64	3.33	-.34	3.25	-.14	3.31	-.12	5.94	-.12	5.25	-.12	4.62
	-.12	4.17	-.12	3.32	-.11	6.48	-.11	3.73	-.10	6.85	-.09	3.33	-.08	6.97	0	7.04
	.08	6.99	.10	3.35	.10	3.46	.11	4.02	.12	4.71	.12	5.54	.12	6.29	.12	6.76
	.60	3.31	.93	3.21	.59	3.09	.77	2.80	.88	2.38	.97	1.80	1.06	1.29	1.16	.66
	1.24	.15	1.29	-.13	1.33	-.19	1.42	-.22	1.98	-.14	2.77	-.02	3.81	.14	4.64	.27
	5.40	.39	5.85	.45	6.11	.48	6.24	.49	6.32	.46	6.37	.39				
36	21.00															
1049	-6.38	.39	-6.32	.44	-6.25	.44	-6.05	.41	-5.67	.35	-4.95	.24	-4.02	.09	-3.35	-.01
	-2.39	-.13	-1.75	-.26	-1.29	-.31	-.10	5.45	-.09	6.86	-.09	6.32	-.09	4.63	-.07	6.97
	-.07	3.98	-.04	3.46	0	7.03	.06	3.47	.08	3.59	.08	3.93	.08	6.97	.09	4.45
	.09	5.65	.10	6.07	.10	6.83	1.35	-.28	1.95	-.20	3.15	-.01	4.29	.16	5.15	.30
	5.75	.32	6.11	.43	6.27	.44	6.37	.39								
37	21.30															
1085	-6.34	.34	-5.87	.32	-5.28	.23	-4.46	.10	-3.77	-.01	-3.05	-.12	-2.33	-.23	-1.74	-.32
	-1.25	-.37	-.08	6.73	-.08	5.38	-.06	6.94	-.06	4.21	-.03	3.54	0	6.98	.05	3.53
	.06	3.77	.06	4.19	.07	4.81	.07	5.42	.07	6.93	.08	6.16	.08	6.73	1.28	-.37
	1.98	-.28	2.71	-.17	3.33	-.08	4.34	.07	5.13	.20	5.65	.28				
38	21.50															
1115	-.08	6.98	-.08	6.51	-.08	5.00	-.06	4.92	-.05	6.94	-.04	4.15	-.01	3.60	0	6.96
	.02	3.81	.03	3.73	.05	4.80	.05	4.16	.06	5.53	.06	6.91	.07	6.74	.07	6.26
39	22.24															
1131	0	6.95														

Table 3

PHASE CHANGE COATING TEST DATA SUMMARY SHEET

TEST TITLE: Ascent Heat Transfer Test of the MDAC Configurations

TEST NUMBER: VT1162-9 **TEST FACILITY:** VKF Tunnel B

TEST DATE: June 1971 **TEST ENGINEER:** R. K. Matthews & W. R. Martindale

	Run No.	Model Configuration Identification	Model Scale	Free Stream Mach Number	Total Pressure (psia)	Total Temp. (^{o}R)	$\frac{T_{aw}*}{T_{total}}$	$\frac{RNX10^{6}}{Ft}$	Phase Change Temp. (^{o}F)	Model Position (degrees)			Model Surface
										α	β	ϕ	
	194	MDAC-B + DWO	0.011	8.0	150	1180	1.0	0.8	400	0	0	0	Side
	195								250	0			
+	196								150	0			
+	201								113/400	0			
	197								250	-5			
+	198								113/500	-5			
	199								250/400	5			
	200								113	5			
+	202		0.011	8.0	555	1310	1.0	2.5	300/500	0			
+	203								125/500	0			
	208								200	0			
	204								250/500	5			
	205								150	5			

* T_{aw} = adiabatic wall temperature

+Post-test photograph

PHASE CHANGE COATING TEST DATA SUMMARY SHEET

TEST TITLE: Ascent Heat Transfer Test of the MDAC Configurations

TEST NUMBER: VT1162-9 **TEST FACILITY:** VKF Tunnel B

TEST DATE: June 1971 **TEST ENGINEER:** R. K. Matthews & W. R. Martindale

	Run No.	Model Configuration Identification	Model Scale	Free Stream Mach Number	Total Pressure (psia)	Total Temp. (^{o}R)	$\frac{T_{aw}*}{T_{total}}$	$\frac{RNX10^{6}}{Ft}$	Phase Change Temp. (^{o}F)	Model Position (degrees)			Model Surface
										α	β	ϕ	
+	206	MDAC-B + DWO	0.011	8.0	555	1310	1.0	2.5	250/500	-5	0	0	Side
	207		"	"	"	"	"	"	150	-5			
+	209		0.011	8.0	860	1340	1.0	3.7	300/500	0			
	210		"	"	"	"	"	"	200	0			
	222		0.011	8.0	555	1310	N/A	2.5	01 Flow	0			Top/Side
	221									-5			
	220									5			
	224								Shado	0	0	0	N/A
	227									0	0	90	
	225									5		0	
	226									-5			

* T_{aw} = adiabatic wall temperature

+ Post-test photograph

TABLE 4. SUMMARY DATA INDEX

CONFIGURATION	MODEL SURFACE	DATA PRESENTED	PAGES	REYNOLDS NUMBER X 10^6/FT			ANGLE OF ATTACK - DEGREES		
				0.8	2.5	3.7	-5	0	5
BOOSTER - ORB	SIDE	A	40 - 41	X				X	
			43 - 44	X				X	
			46 - 47	X				X	
			48	X				X	
			50 - 51	X				X	
			52	X				X	
			54 - 55	X			X		
			57 - 58	X			X		
			59	X			X		
			61 - 62	X					X
			64 - 65	X					X
			67 - 68		X			X	
			69		X			X	
			71 - 72		X			X	
			73		X			X	
			75 - 76		X			X	
			78 - 79		X				X
			81 - 82		X				X
			84 - 85		X		X		
			86		X		X		
			88 - 89		X		X		
			91 - 92			X		X	
			93			X		X	
	SIDE	A	95 - 96			X		X	
	TOP	C	98		X			X	
	SIDE		99		X			X	
	TOP		101		X		X		
	SIDE		102		X		X		
	TOP		104		X				X
	SIDE	C	105		X				X
	SIDE	B	106		X				X
	SIDE		107		X			X	
	TOP		108		X			X	
BOOSTER - ORB	SIDE	B	109		X		X		

PRESENTED DATA SCHEDULE

A: PHASE - CHANGE PAINT PHOTOGRAPHS
B: SHADOWGRAPH PHOTOGRAPHS
C: OIL FLOW PHOTOGRAPHS

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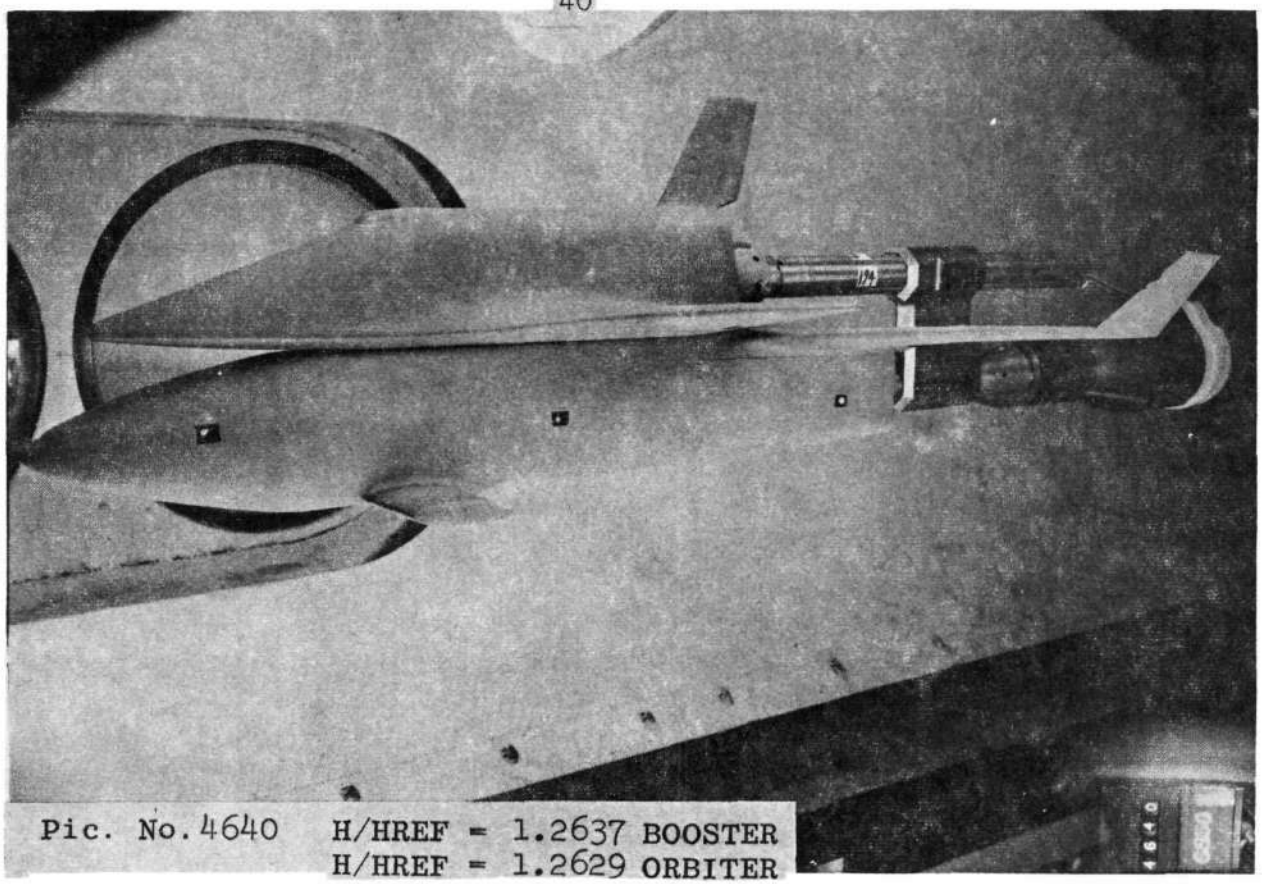
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
196	3121	PDAC-B-DWC	7.93	150.9	1181	.00	.00	0	0	0

T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .01 FT)	SREF (R= .01 FT)
87.0	.016	.720	3624	1.578E-05	7.005E-08	8.17E 05	2.614E-02	5.730E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXX)
TOP(T)	400		
SIDE(US)	400	AVERAGE TW = 76 (B)	=.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	400	AVERAGE TW = 77 (O)	

PIC NO	TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.85TO)	H(.85TO)/HREF	ST(TO)	MODEL	TEMP F		
US 4640 (400)	5.75	4.71	O	3.30E-02	1.2629	4.980E-02	1.9056	6.760E-02	2.5868	7.148E-02	76	75	78	77
US 4640 (400)	5.75	4.71	B	3.30E-02	1.2637	4.983E-02	1.9069	6.765E-02	2.5886	7.153E-02	76	75	78	77
US 4640 (400)	5.75	4.71	B	3.30E-02	1.2637	4.983E-02	1.9069	6.765E-02	2.5886	7.153E-02	76	75	78	77
US 4640 (400)	5.75	4.71	O	3.30E-02	1.2629	4.980E-02	1.9056	6.760E-02	2.5868	7.148E-02	76	75	78	77
US 4662 (400)	17.20	16.16	O	1.50E-02	.5734	2.259E-02	.8651	3.067E-02	1.1744	3.247E-02	79	75	97	78
US 4662 (400)	17.20	16.16	B	1.50E-02	.5737	2.261E-02	.8657	3.069E-02	1.1752	3.249E-02	79	75	97	78
US 4662 (400)	17.20	16.16	B	1.50E-02	.5737	2.261E-02	.8657	3.069E-02	1.1752	3.249E-02	79	75	97	78
US 4662 (400)	17.20	16.16	O	1.50E-02	.5734	2.259E-02	.8651	3.067E-02	1.1744	3.247E-02	79	75	97	78
US 4689 (400)	31.24	30.20	O	9.29E-03	.3562	1.402E-02	.5374	1.903E-02	.7296	2.019E-02	84	75	118	78
US 4689 (400)	31.24	30.20	B	9.30E-03	.3564	1.403E-02	.5378	1.905E-02	.7301	2.021E-02	84	75	118	78
US 4689 (400)	31.24	30.20	B	9.30E-03	.3564	1.403E-02	.5378	1.905E-02	.7301	2.021E-02	84	75	118	78
US 4689 (400)	31.24	30.20	O	9.29E-03	.3562	1.402E-02	.5374	1.903E-02	.7296	2.019E-02	84	75	118	78
US 4712 (400)	43.24	42.20	O	6.91E-03	.2651	1.042E-02	.4001	1.415E-02	.5431	1.505E-02	89	75	133	79
US 4712 (400)	43.24	42.20	B	6.91E-03	.2653	1.043E-02	.4003	1.416E-02	.5434	1.506E-02	89	75	133	79
US 4712 (400)	43.24	42.20	B	6.91E-03	.2653	1.043E-02	.4003	1.416E-02	.5434	1.506E-02	89	75	133	79
US 4712 (400)	43.24	42.20	O	6.91E-03	.2651	1.042E-02	.4001	1.415E-02	.5431	1.505E-02	89	75	133	79



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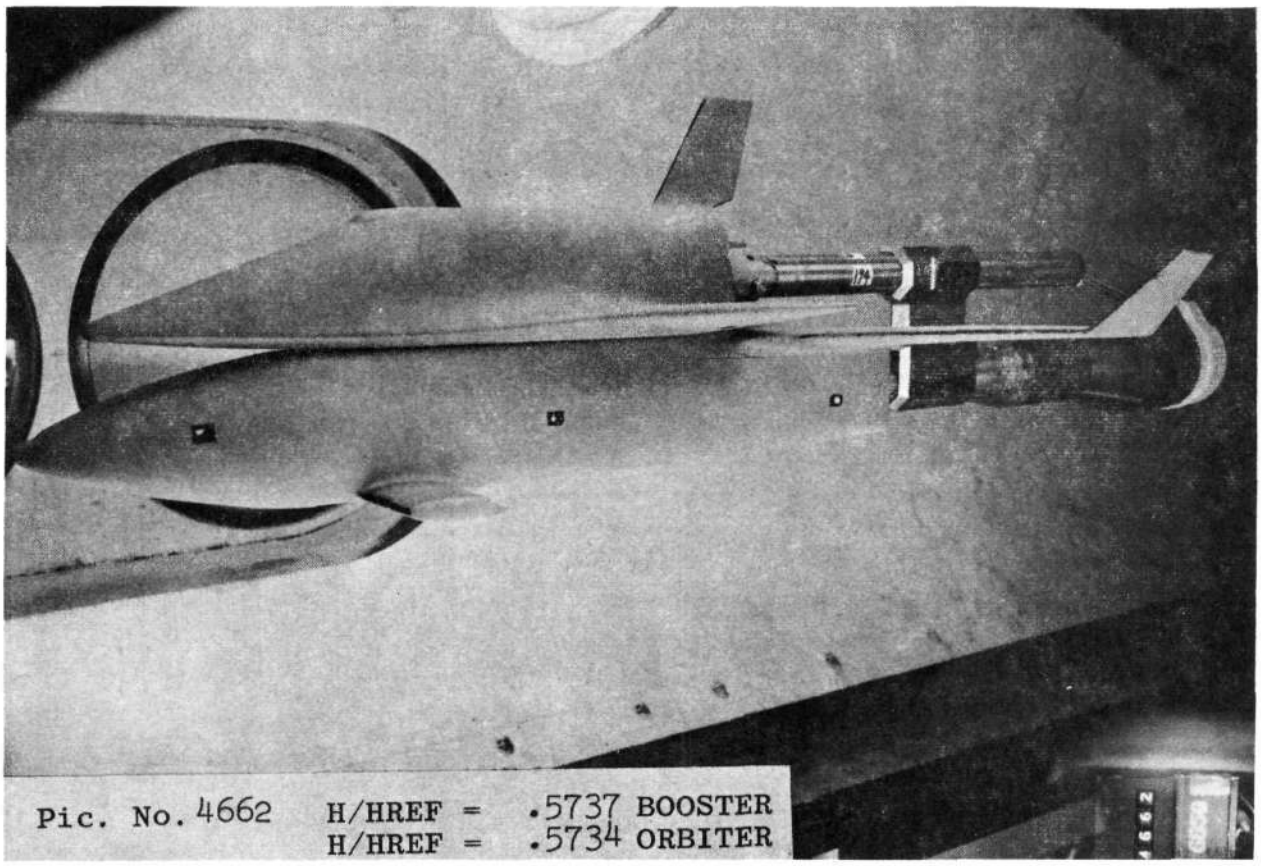

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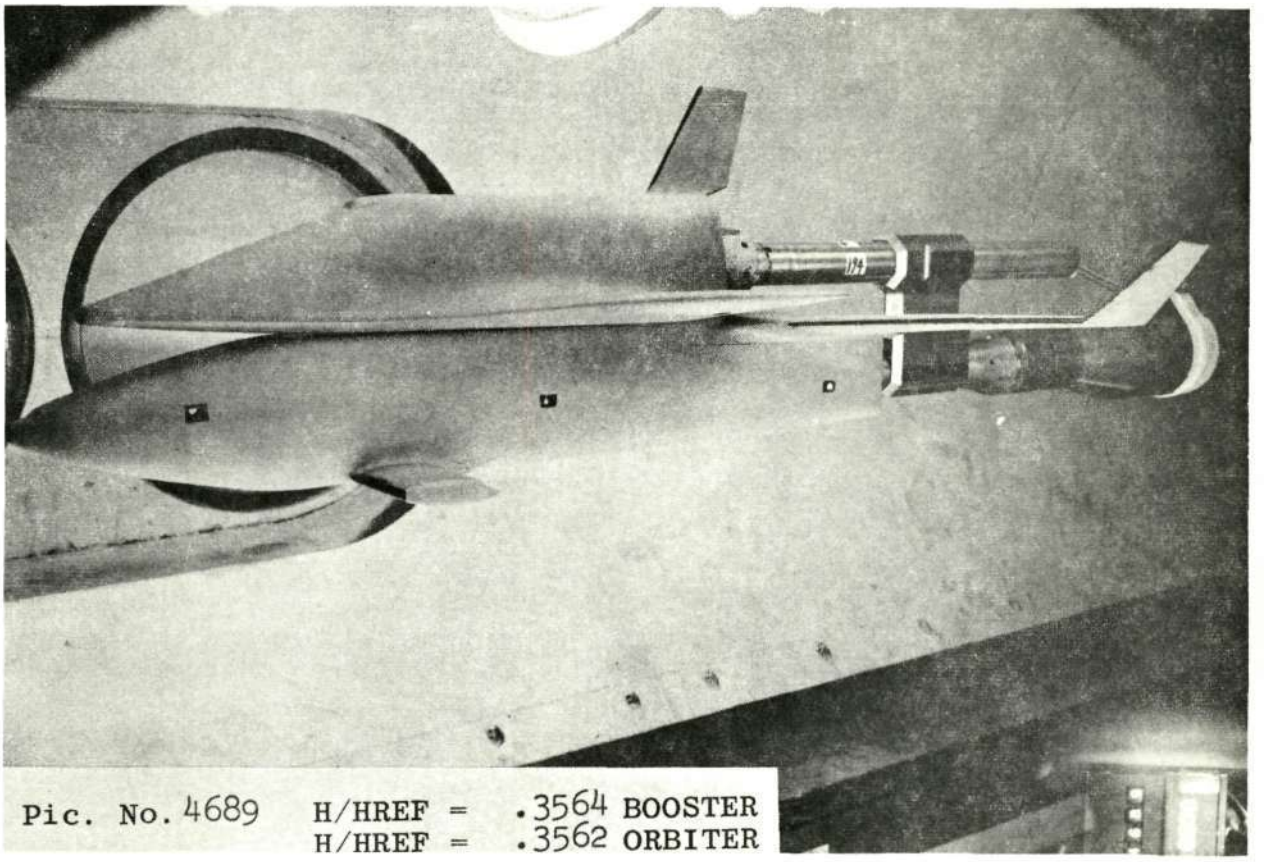

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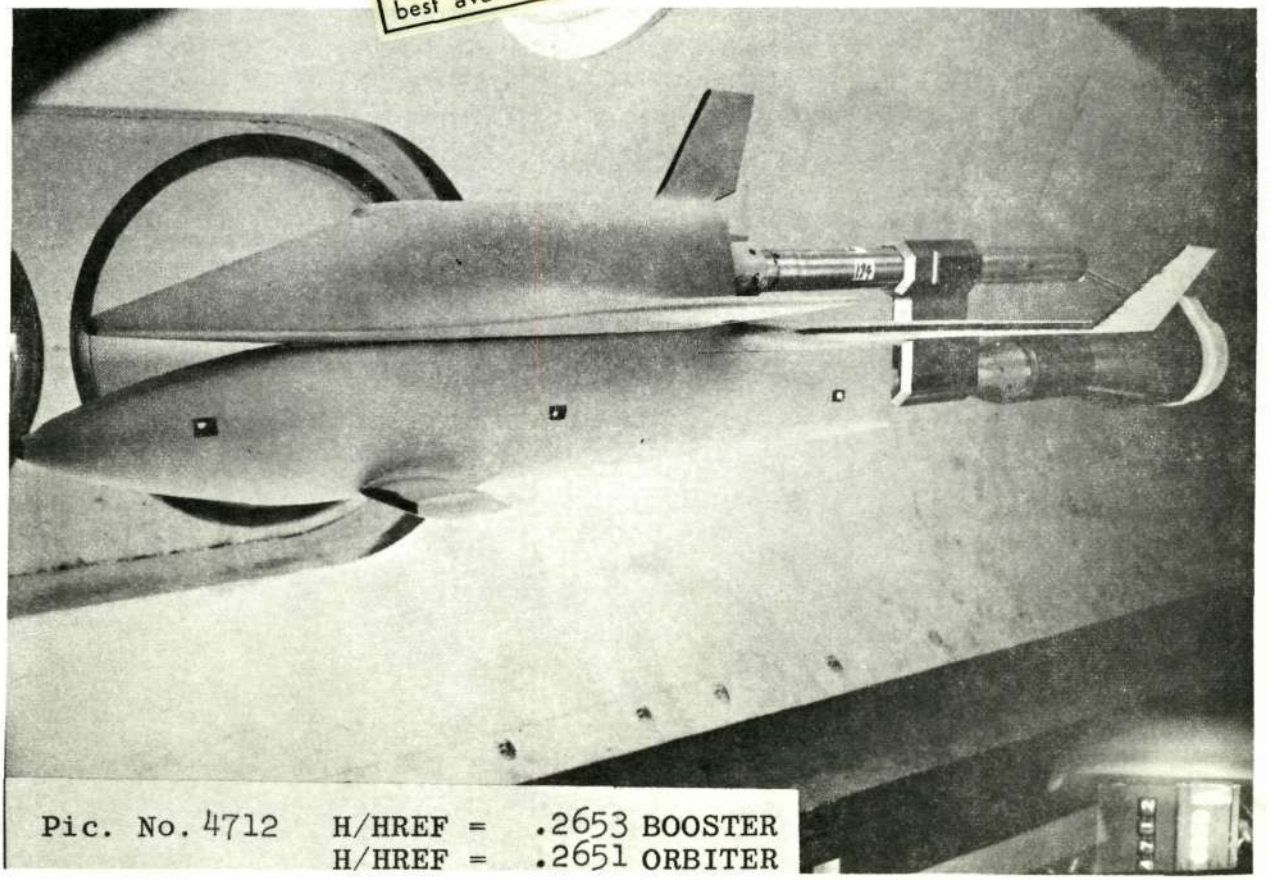

Pic. No. 4712 H/HREF = .2653 BOOSTER
H/HREF = .2651 ORBITER

Group 194 Re/ft 8.17E 05 ALPHA 0

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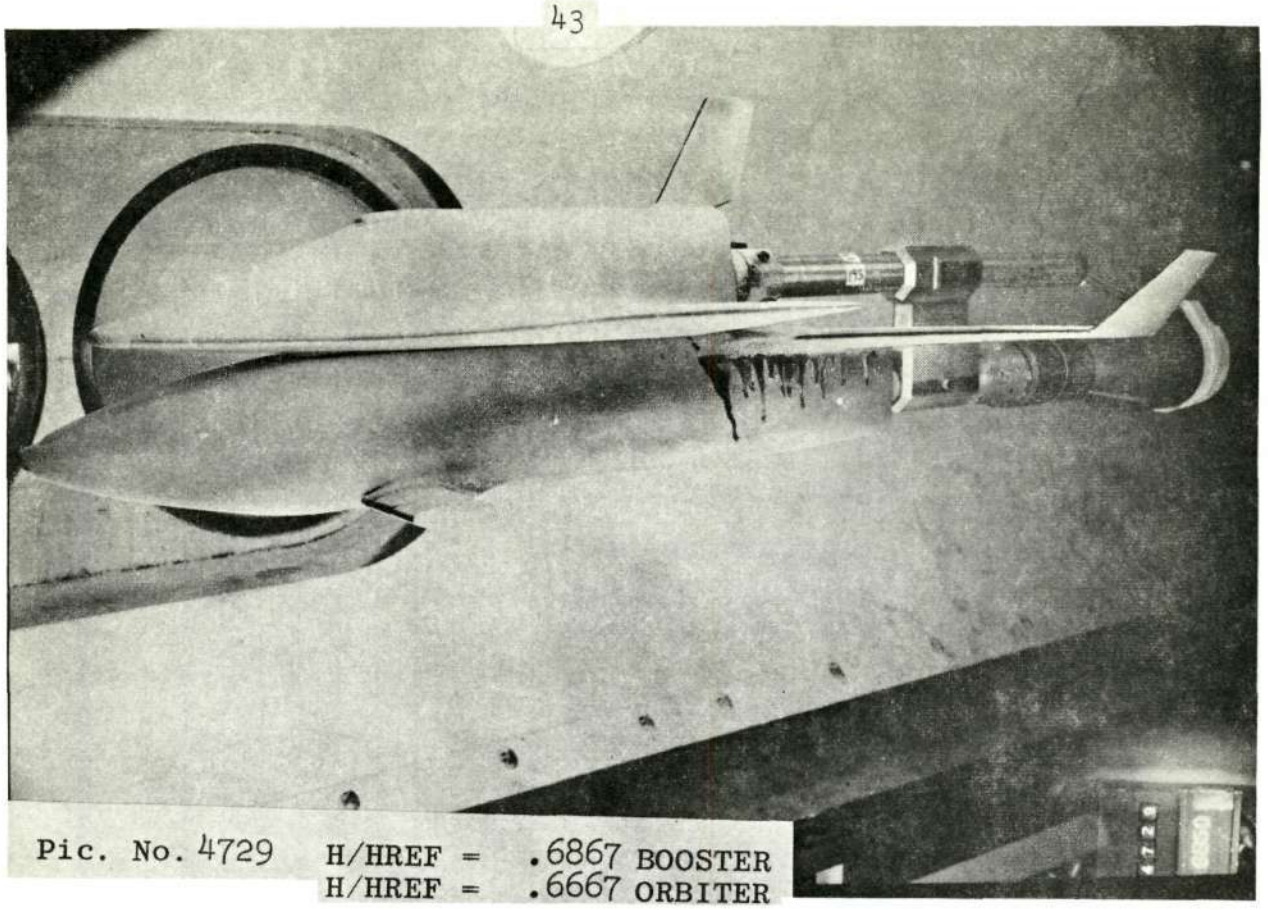
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
195	3122	PDAC-8+DWC	7.93	152.6	1181	.00	.00	0	0	0

T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .0111FT)	STREF (R= .0111FT)
87.0	.017	.728	3424	1.596E-05	7.002E-08	8.26E 05	2.630E-02	5.697E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOACAK)
TOP(T)	250		
SIDE(US)	250	AVERAGE TW = 80 (P)	-.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	250	AVERAGE TW = 85 (Q)	

PIC NO	TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.8TO)/HREF	H(.85TO)	H(.85TO)/HREF	ST(TO)	MODEL	TEMP F		
US 4726 (250)	3.65	2.61	0	1.75E-02	.6667	2.300E-02	.8748	2.728E-02	1.0376	3.780E-02	81	77	85	83
US 4729 (250)	3.65	2.61	8	1.81E-02	.6867	2.368E-02	.9007	2.808E-02	1.0680	3.894E-02	81	77	85	83
US 4729 (250)	3.65	2.61	8	1.81E-02	.6867	2.368E-02	.9007	2.808E-02	1.0680	3.894E-02	81	77	85	83
US 4729 (250)	3.65	2.61	0	1.75E-02	.6667	2.300E-02	.8748	2.728E-02	1.0376	3.780E-02	81	77	85	83
US 4737 (250)	7.85	6.81	0	9.97E-03	.3790	1.308E-02	.4973	1.551E-02	.5898	2.149E-02	81	77	88	83
US 4737 (250)	7.85	6.81	8	1.03E-02	.3904	1.346E-02	.5120	1.596E-02	.6071	2.213E-02	81	77	88	83
US 4737 (250)	7.85	6.81	8	1.03E-02	.3904	1.346E-02	.5120	1.596E-02	.6071	2.213E-02	81	77	88	83
US 4737 (250)	7.85	6.81	0	9.97E-03	.3790	1.308E-02	.4973	1.551E-02	.5898	2.149E-02	81	77	88	83
US 4752 (250)	15.65	14.61	0	6.06E-03	.2305	7.957E-03	.3024	9.437E-03	.3586	1.306E-02	83	76	98	82
US 4752 (250)	15.65	14.61	8	6.25E-03	.2374	8.192E-03	.3113	9.714E-03	.3692	1.345E-02	83	76	98	82
US 4752 (250)	15.65	14.61	8	6.25E-03	.2374	8.192E-03	.3113	9.714E-03	.3692	1.345E-02	83	76	98	82
US 4752 (250)	15.65	14.61	0	6.06E-03	.2305	7.957E-03	.3024	9.437E-03	.3586	1.306E-02	83	76	98	82
US 4769 (250)	30.74	29.70	0	3.56E-03	.1352	4.666E-03	.1774	5.534E-03	.2104	7.663E-03	88	76	119	81
US 4769 (250)	30.74	29.70	8	3.46E-03	.1392	4.804E-03	.1826	5.696E-03	.2165	7.893E-03	88	76	119	81
US 4769 (250)	30.74	29.70	8	3.46E-03	.1392	4.804E-03	.1826	5.696E-03	.2165	7.893E-03	88	76	119	81
US 4769 (250)	30.74	29.70	0	3.56E-03	.1352	4.666E-03	.1774	5.534E-03	.2104	7.663E-03	88	76	119	81



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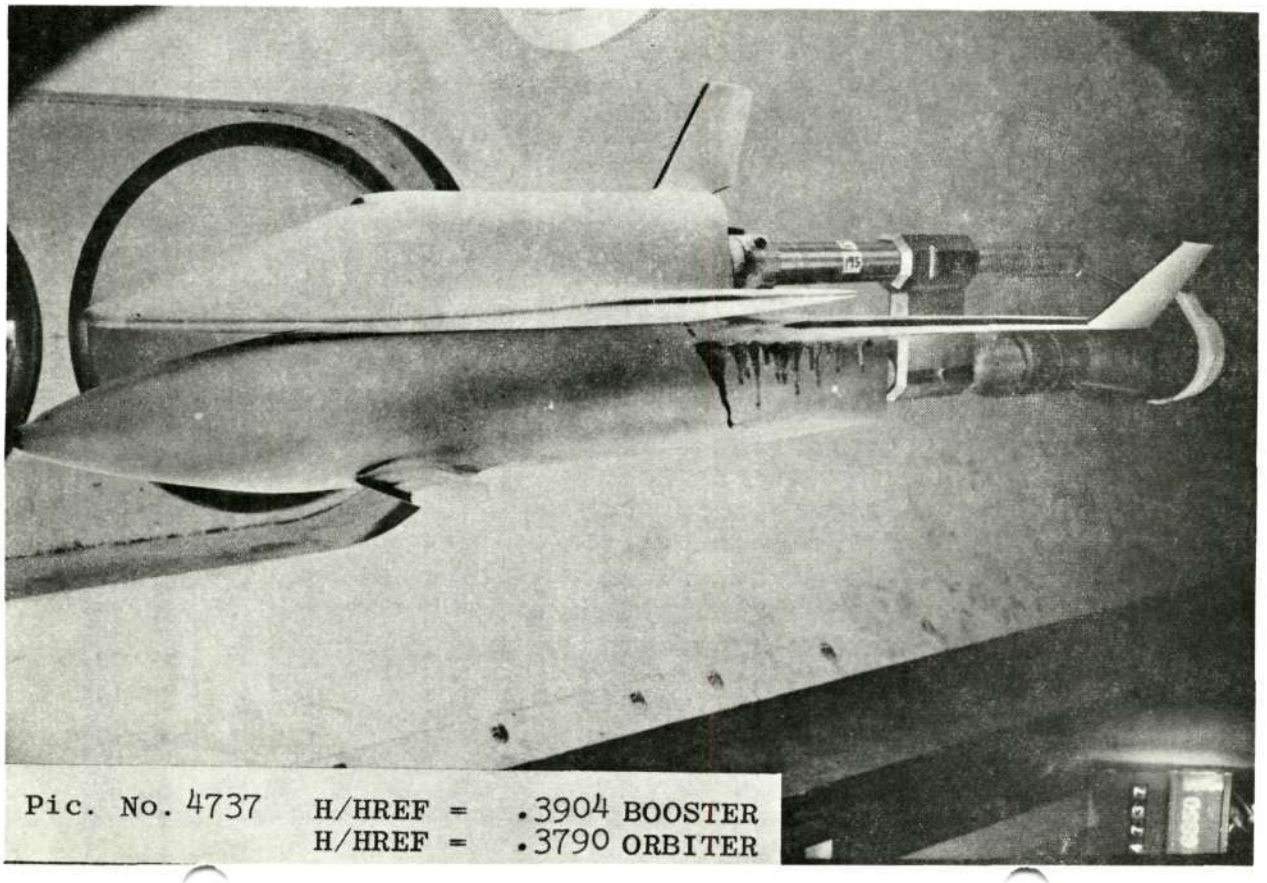
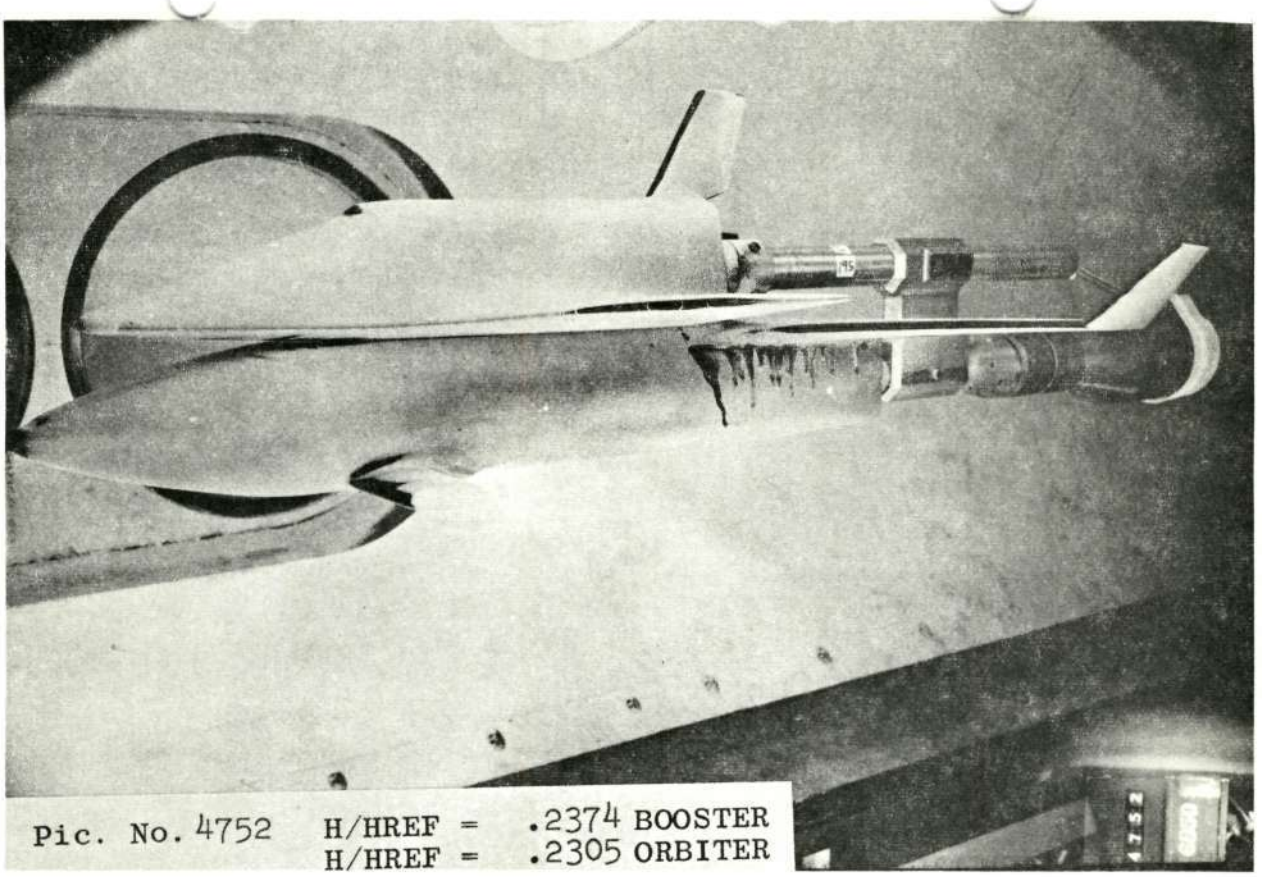
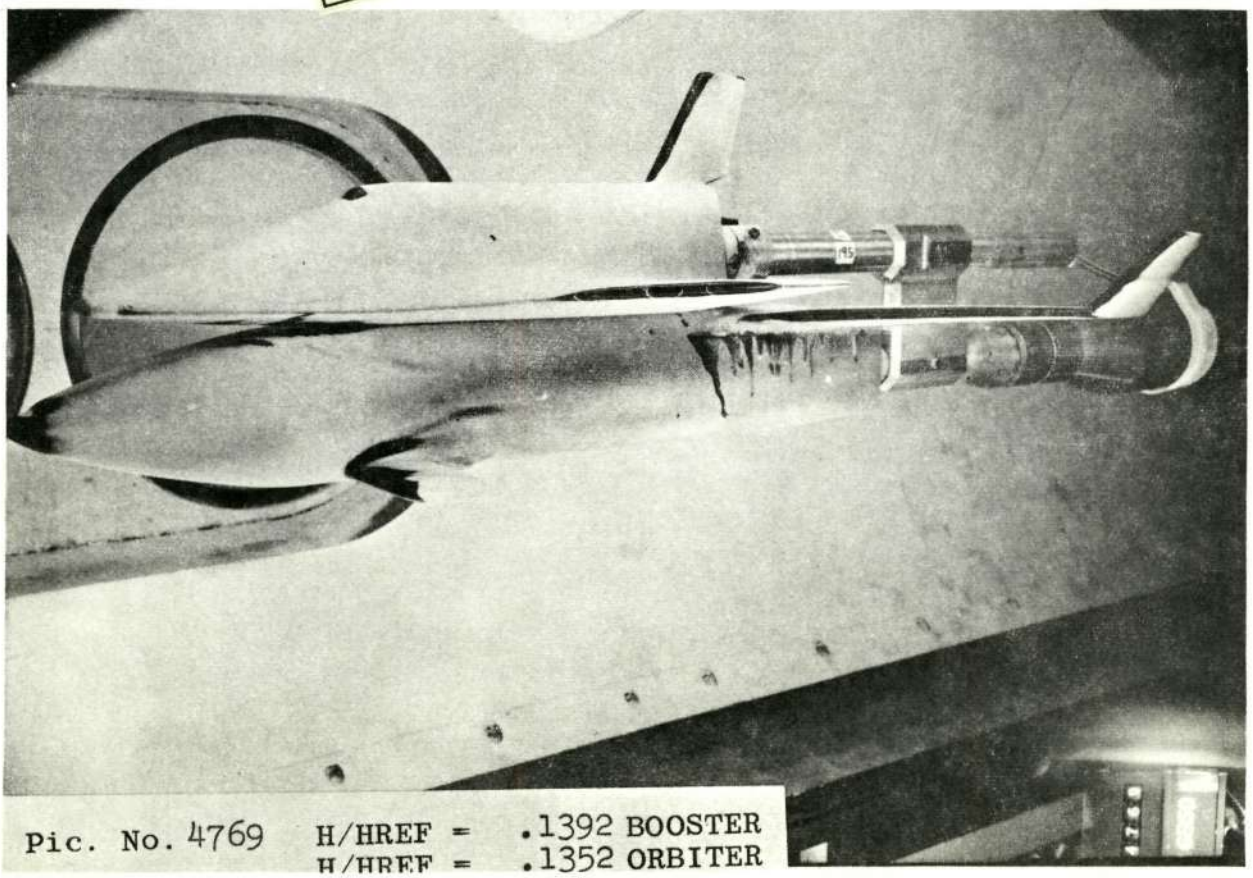
H/HREF = .6667 ORBITER



Pic. No. 4737 H/HREF = .3904 BOOSTER
H/HREF = .3790 ORBITER



Pic. No. 4752 H/HREF = .2374 BOOSTER
H/HREF = .2305 ORBITER



Pic. No. 4769 H/HREF = .1392 BOOSTER
H/HREF = .1352 ORBITER

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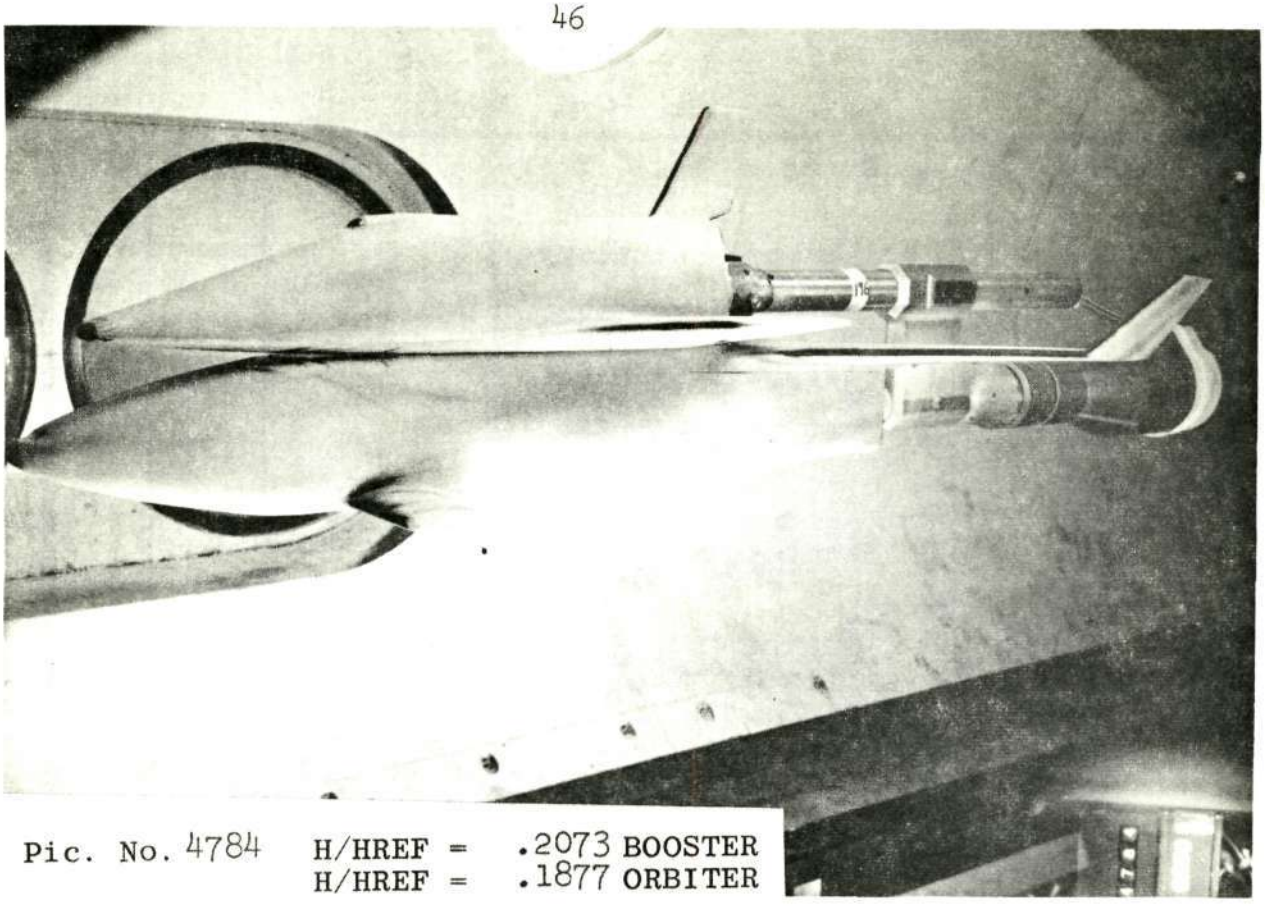
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
196	3121	#DAC-8+0#C	7.93	147.7	1187	.01	.01	0	0	0

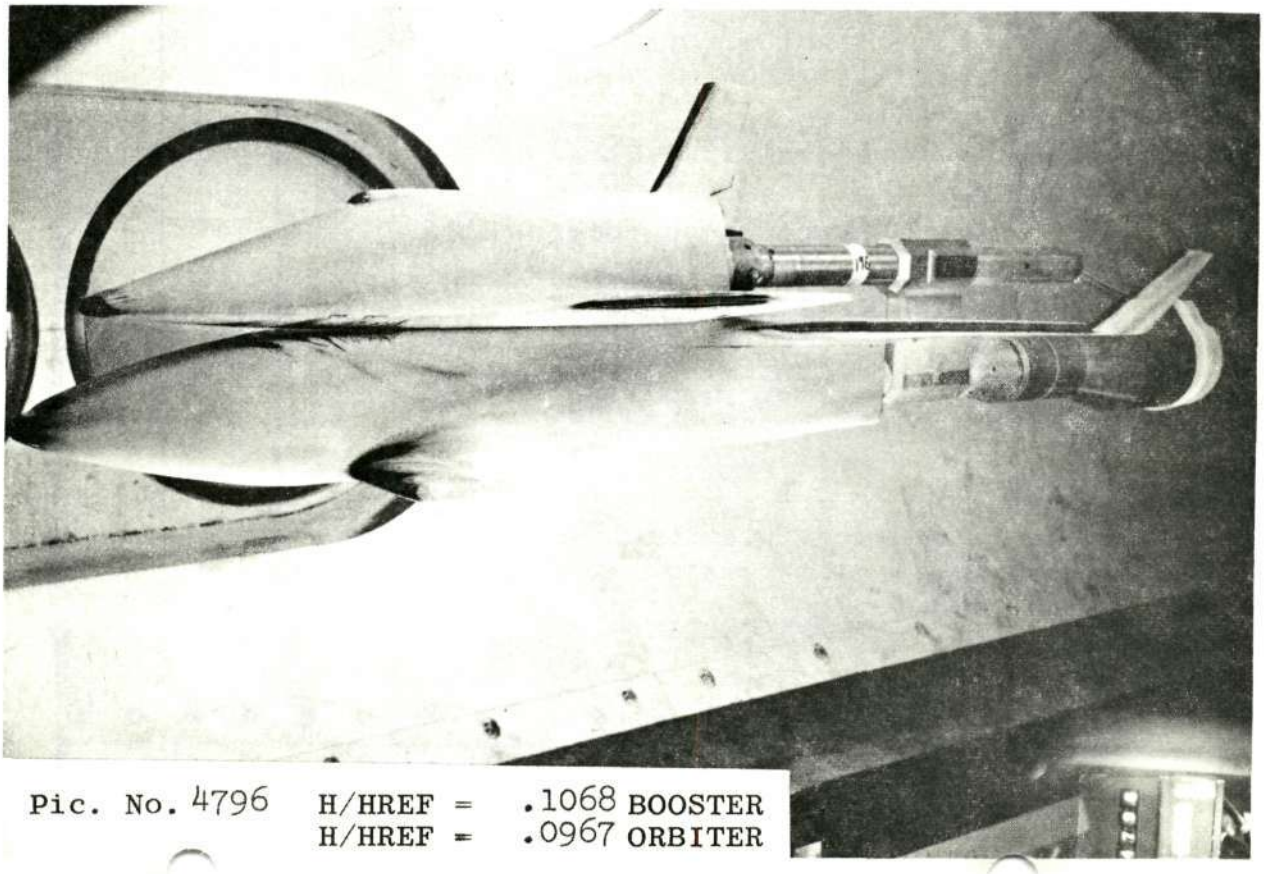
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .011FT)	STREF (R= .011FT)
87.4	.016	.705	3693	1.537E-05	7.039E-08	7.93E 05	2.589E-02	5.809E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXK)
TOP(T)	150		
SIDE(US)	150	AVERAGE TW = 84 (8)	-.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	150	AVERAGE TW = 90 (0)	

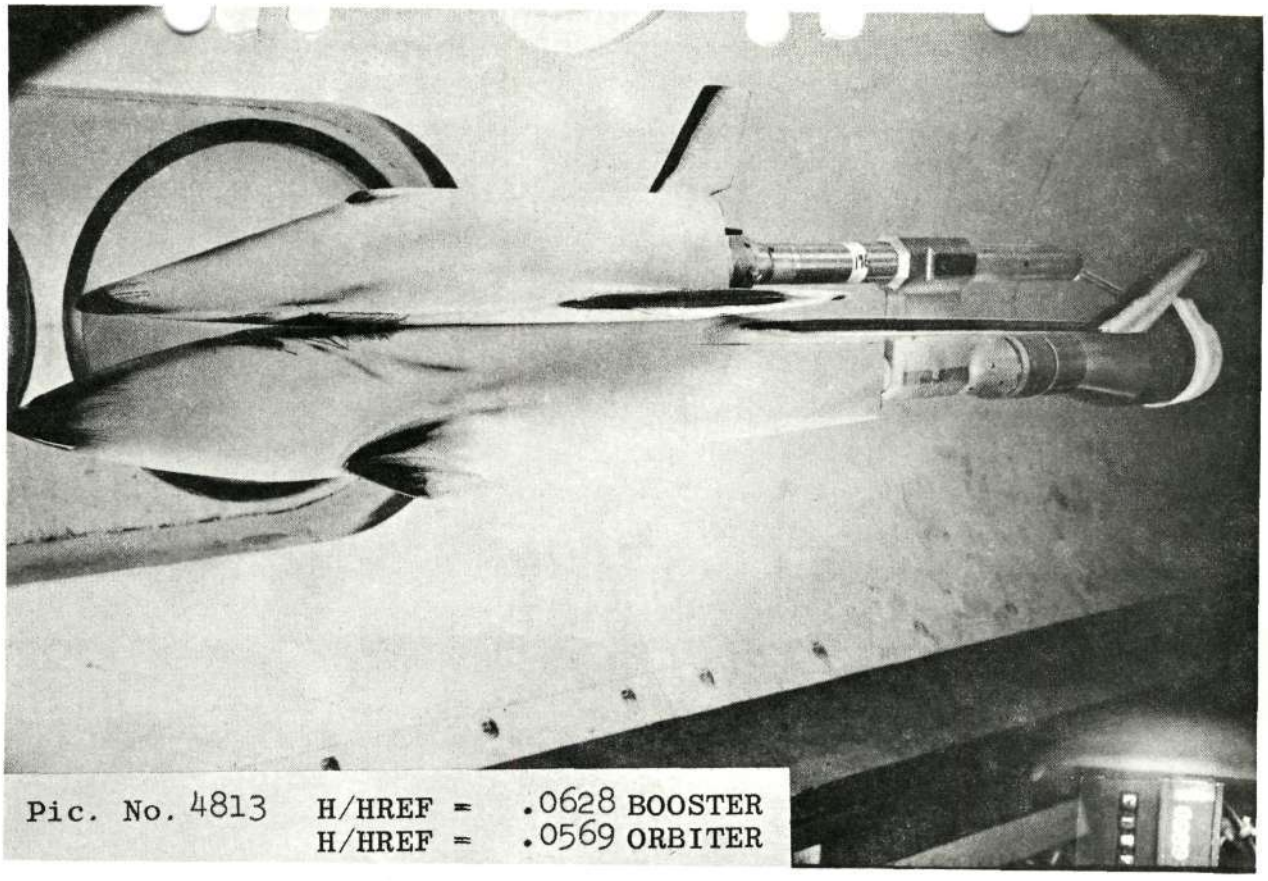
PIC NO		TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.8STO)	H(.8STO)/HREF	ST(TO)	MODEL	TEMP	F	
US 4784	(150)	4.20	3.13	0	4.86E-03	.1877	6.089E-03	.2352	6.969E-03	.2691	1.091E-02	86	81	98	89
US 4784	(150)	4.20	3.13	8	5.37E-03	.2073	6.718E-03	.2594	7.688E-03	.2969	1.205E-02	86	81	98	89
US 4784	(150)	4.20	3.13	8	5.37E-03	.2073	6.718E-03	.2594	7.688E-03	.2969	1.205E-02	86	81	98	89
US 4784	(150)	4.20	3.13	0	4.86E-03	.1877	6.089E-03	.2352	6.969E-03	.2691	1.091E-02	86	81	98	89
US 4796	(150)	10.45	9.38	0	2.68E-03	.0967	3.139E-03	.1211	3.592E-03	.1386	5.616E-03	86	80	98	89
US 4796	(150)	10.45	9.38	8	2.77E-03	.1068	3.463E-03	.1337	3.963E-03	.1529	6.203E-03	86	80	98	89
US 4796	(150)	10.45	9.38	8	2.77E-03	.1068	3.463E-03	.1337	3.963E-03	.1529	6.203E-03	86	80	98	89
US 4796	(150)	10.45	9.38	0	2.68E-03	.0967	3.139E-03	.1211	3.592E-03	.1386	5.616E-03	86	80	98	89
US 4813	(150)	21.30	20.23	0	1.48E-03	.0569	1.851E-03	.0713	2.118E-03	.0816	3.298E-03	89	79	116	89
US 4813	(150)	21.30	20.23	8	1.63E-03	.0628	2.042E-03	.0786	2.336E-03	.0900	3.642E-03	89	79	116	89
US 4813	(150)	21.30	20.23	8	1.63E-03	.0628	2.042E-03	.0786	2.336E-03	.0900	3.642E-03	89	79	116	89
US 4813	(150)	21.30	20.23	0	1.48E-03	.0569	1.851E-03	.0713	2.118E-03	.0816	3.298E-03	89	79	116	89
US 4824	(150)	32.89	31.82	0	1.03E-03	.0397	1.293E-03	.0498	1.480E-03	.0569	2.300E-03	93	79	132	89
US 4824	(150)	32.89	31.82	8	1.14E-03	.0439	1.427E-03	.0549	1.633E-03	.0628	2.541E-03	93	79	132	89
US 4824	(150)	32.89	31.82	8	1.14E-03	.0439	1.427E-03	.0549	1.633E-03	.0628	2.541E-03	93	79	132	89
US 4824	(150)	32.89	31.82	0	1.03E-03	.0397	1.293E-03	.0498	1.480E-03	.0569	2.300E-03	93	79	132	89



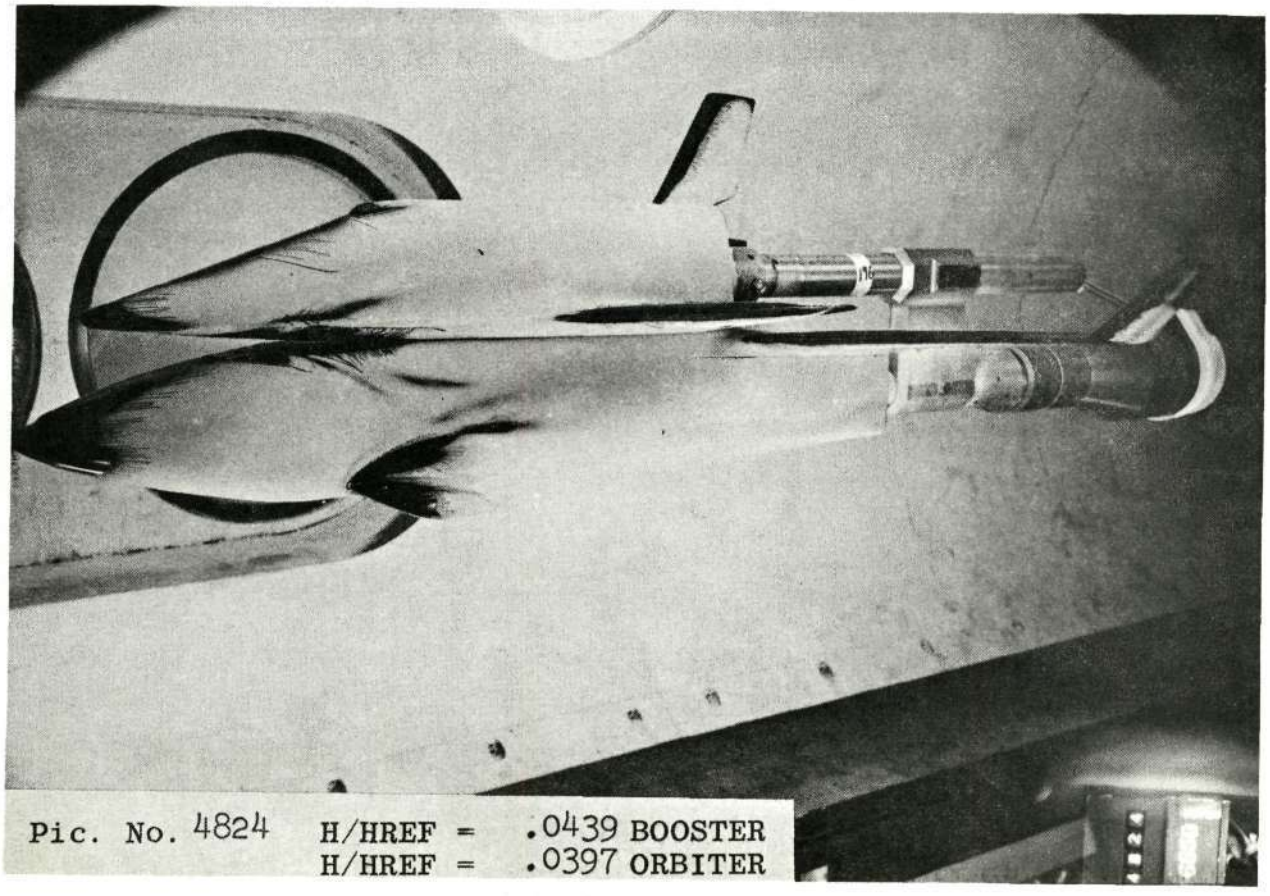
Pic. No. 4784 H/HREF = .2073 BOOSTER
H/HREF = .1877 ORBITER



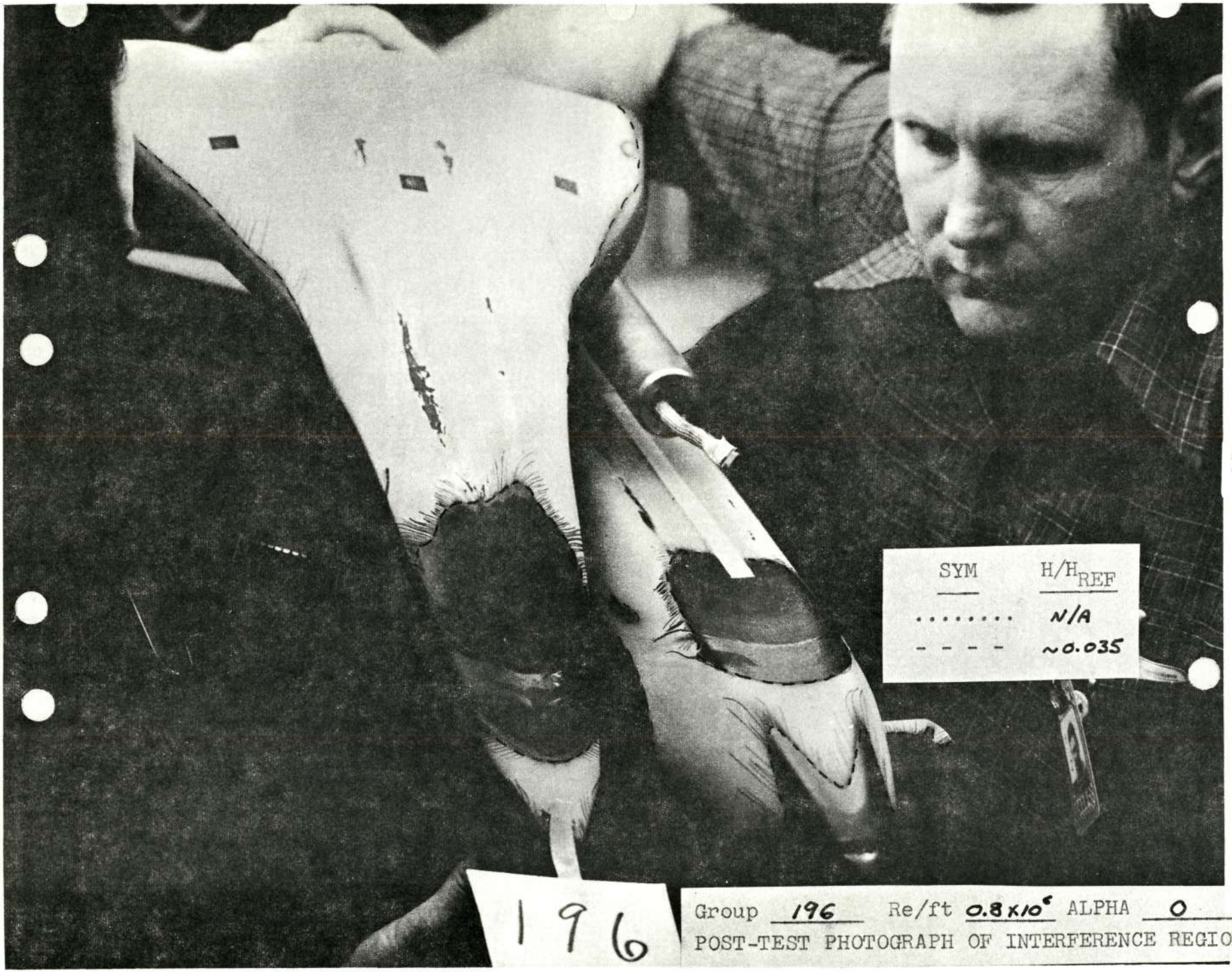
Pic. No. 4796 H/HREF = .1068 BOOSTER
H/HREF = .0967 ORBITER



Pic. No. 4813 H/HREF = .0628 BOOSTER
H/HREF = .0569 ORBITER



Pic. No. 4824 H/HREF = .0439 BOOSTER
H/HREF = .0397 ORBITER



Group 196 Re/ft 0.8 x 10^6 ALPHA 0

POST-TEST PHOTOGRAPH OF INTERFERENCE REGION

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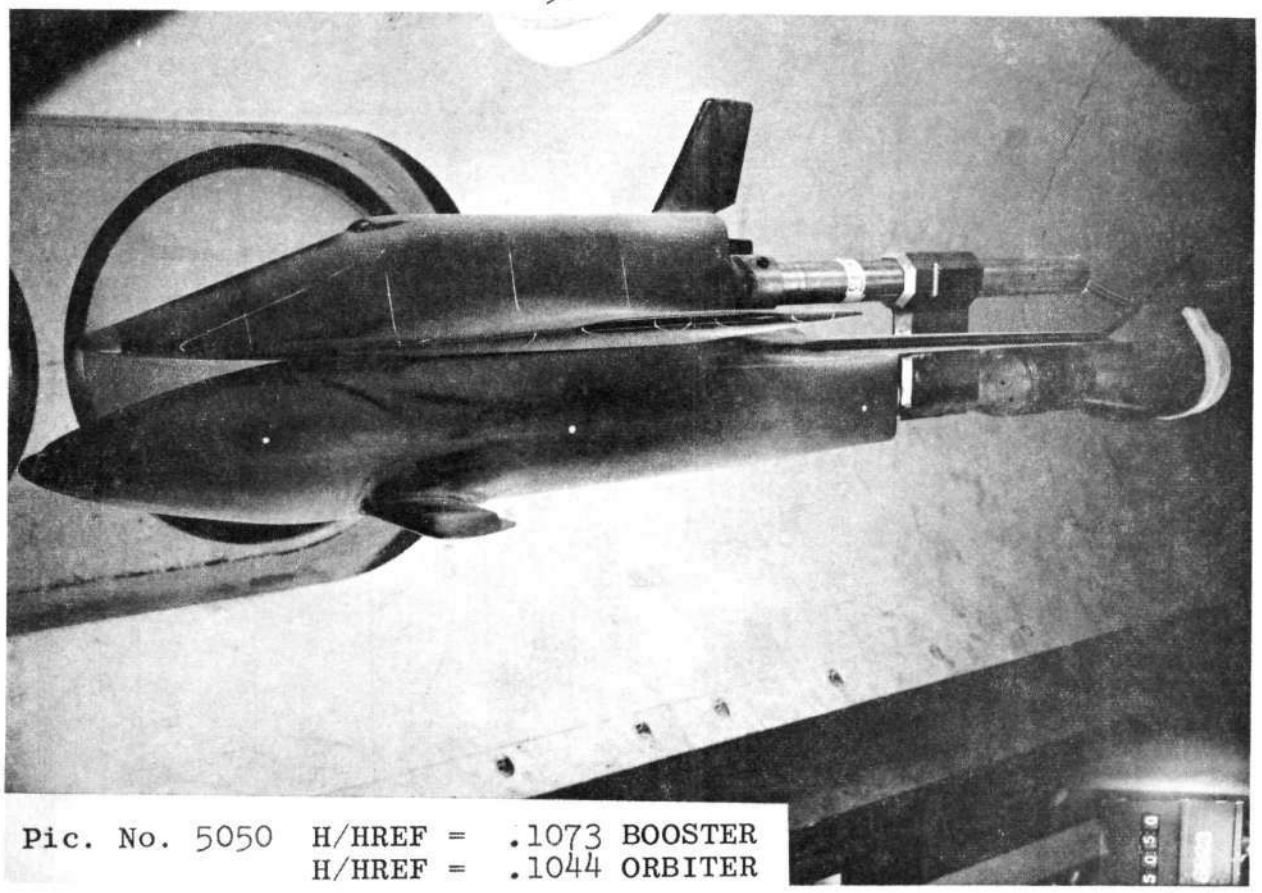
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
201	1222	MDAC-A+DWC	7.93	148.1	1185	.03	.03	0	0	0

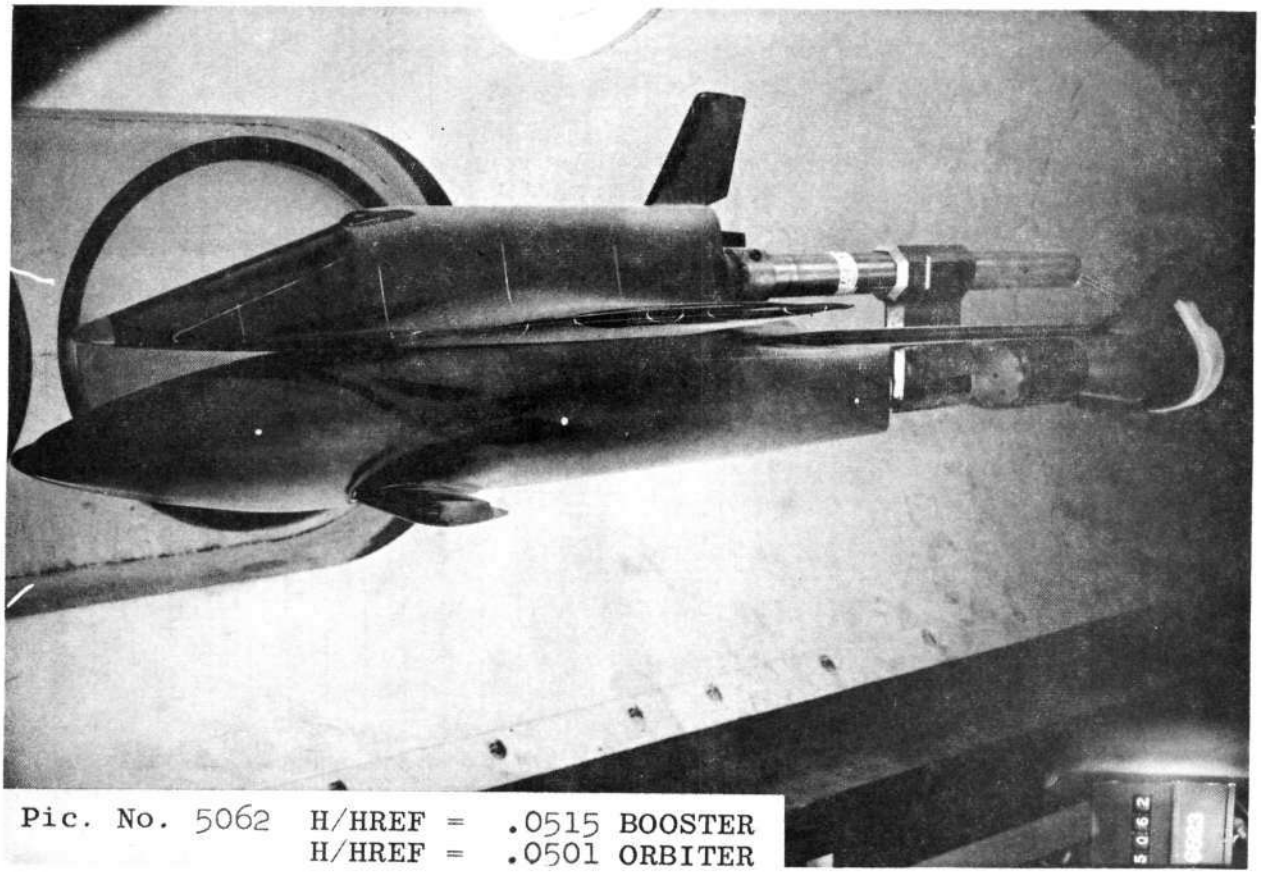
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	HREF (R= .01)FT)	STREF (R= .01)FT)
87.3	.016	.707	3630	1.543E-05	7.027E-08	7.97E 05	2.591E-02	5.796E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXK)
TOP(T)	113		
SIDE(US)	400	AVERAGE Tw = 81 (R)	=.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	400	AVERAGE Tw = 82 (O)	

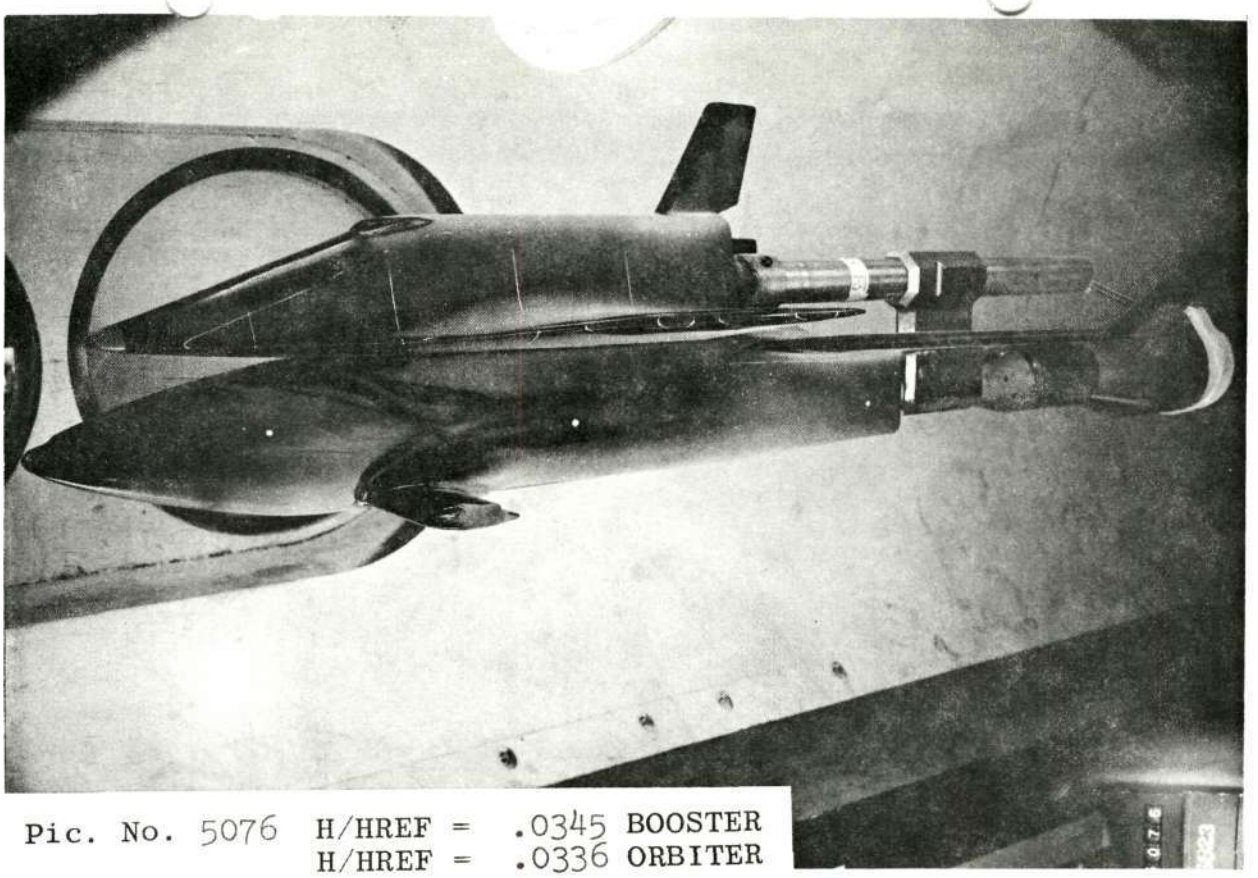
PIC NO	TIME	DELTIME	H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.85TO)	H(.85TO)/HREF	ST(TO)	MODEL	TEMP F		
US 5050 (400)	3.65	2.61	0 4.53E-02	1.7494	6.808E-02	2.6283	9.195E-02	3.5500	1.002E-01	82	79	85	78
US 5050 (113)	3.65	2.61	8 2.78E-03	.1073	3.436E-03	.1326	3.900E-03	.1506	6.241E-03	82	79	85	78
US 5050 (400)	3.65	2.61	8 4.54E-02	1.7536	6.824E-02	2.6346	9.217E-02	3.5586	1.004E-01	82	79	85	78
US 5050 (113)	3.65	2.61	0 2.70E-03	.1044	3.346E-03	.1292	3.796E-03	.1466	6.071E-03	82	79	85	78
US 5062 (400)	9.95	8.91	0 2.18E-02	.8404	3.269E-02	1.2626	4.416E-02	1.7054	4.815E-02	82	79	91	78
US 5062 (113)	9.95	8.91	8 1.33E-03	.0515	1.650E-03	.0637	1.873E-03	.0723	2.999E-03	82	79	91	78
US 5062 (400)	9.95	8.91	8 2.19E-02	.8424	3.277E-02	1.2656	4.427E-02	1.7095	4.827E-02	82	79	91	78
US 5062 (113)	9.95	8.91	0 1.30E-03	.0501	1.607E-03	.0621	1.823E-03	.0704	2.918E-03	82	79	91	78
US 5076 (400)	17.25	16.21	0 1.46E-02	.5626	2.190E-02	.8452	2.957E-02	1.1417	3.223E-02	82	80	103	78
US 5076 (113)	17.25	16.21	8 8.94E-04	.0345	1.105E-03	.0427	1.254E-03	.0484	2.008E-03	82	80	103	78
US 5076 (400)	17.25	16.21	8 1.46E-02	.5640	2.195E-02	.8473	2.965E-02	1.1445	3.231E-02	82	80	103	78
US 5076 (113)	17.25	16.21	0 8.69E-04	.0336	1.076E-03	.0415	1.221E-03	.0471	1.953E-03	82	80	103	78
US 5090 (400)	31.24	30.20	0 9.06E-03	.3498	1.362E-02	.5255	1.839E-02	.7099	2.003E-02	82	81	124	80
US 5090 (113)	31.24	30.20	8 5.56E-04	.0215	6.872E-04	.0265	7.800E-04	.0301	1.248E-03	82	81	124	80
US 5090 (400)	31.24	30.20	8 9.09E-03	.3506	1.365E-02	.5268	1.844E-02	.7116	2.008E-02	82	81	124	80
US 5090 (113)	31.24	30.20	0 5.41E-04	.0209	6.693E-04	.0258	7.594E-04	.0293	1.214E-03	82	81	124	80



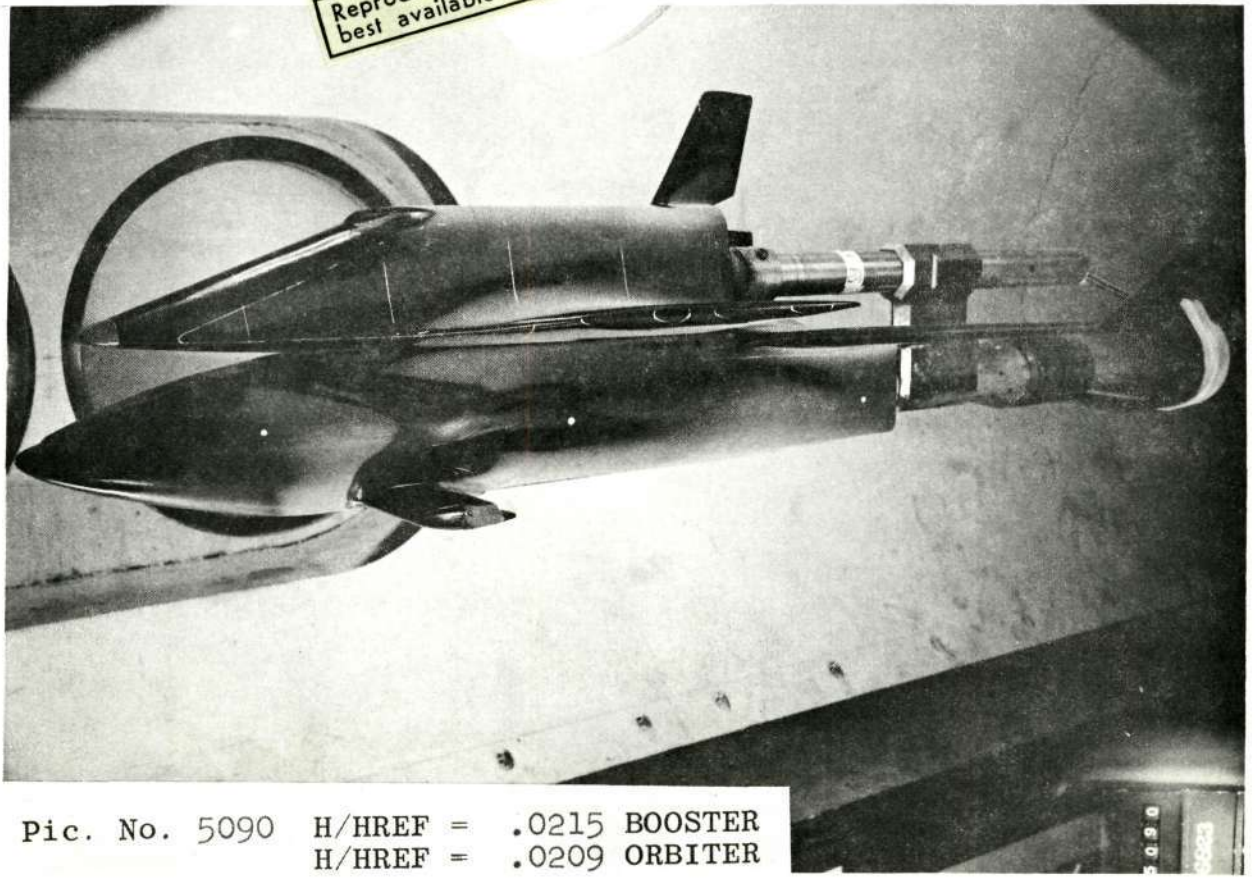
Pic. No. 5050 H/HREF = .1073 BOOSTER
H/HREF = .1044 ORBITER



Pic. No. 5062 H/HREF = .0515 BOOSTER
H/HREF = .0501 ORBITER



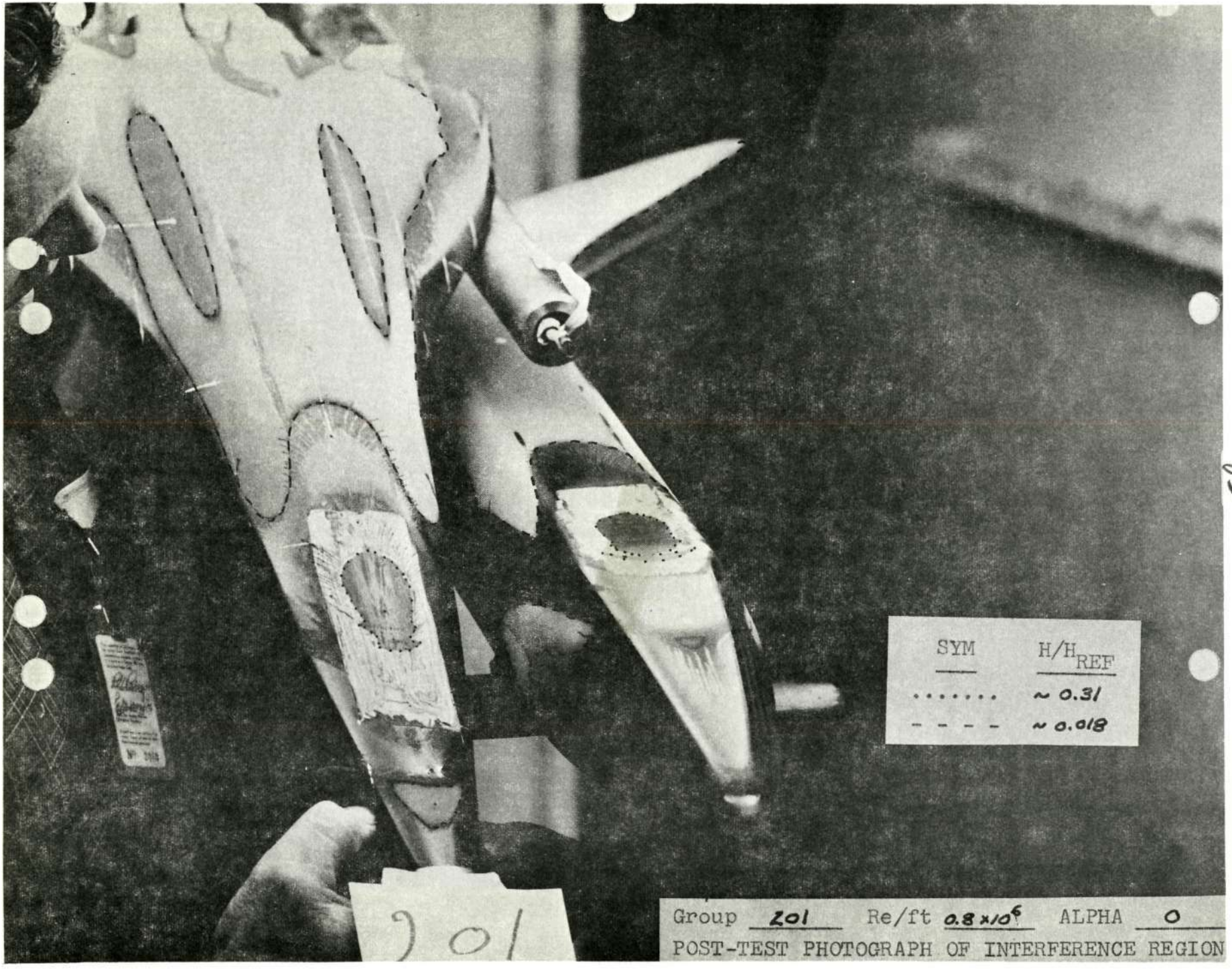
Pic. No. 5076 H/HREF = .0345 BOOSTER
H/HREF = .0336 ORBITER



Pic. No. 5090 H/HREF = .0215 BOOSTER
H/HREF = .0209 ORBITER

C.2

Group 201 Re/ft 7.97E 05 ALPHA 0



Group 201 Re/ft 0.8×10^6 ALPHA 0

POST-TEST PHOTOGRAPH OF INTERFERENCE REGION

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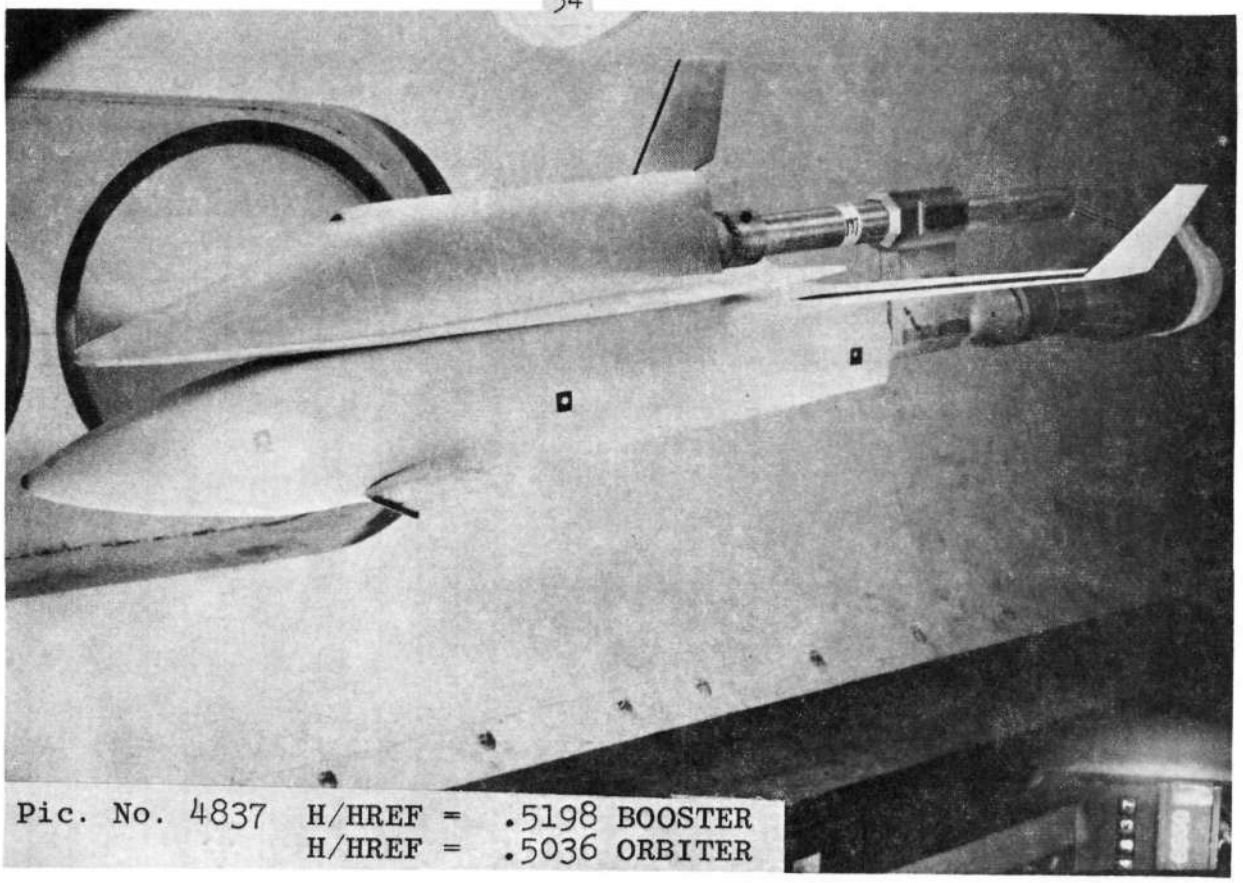
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
167	3222	MDAC-B-DWC	7.93	152.5	1195	-5.00	-5.09	0	0	0

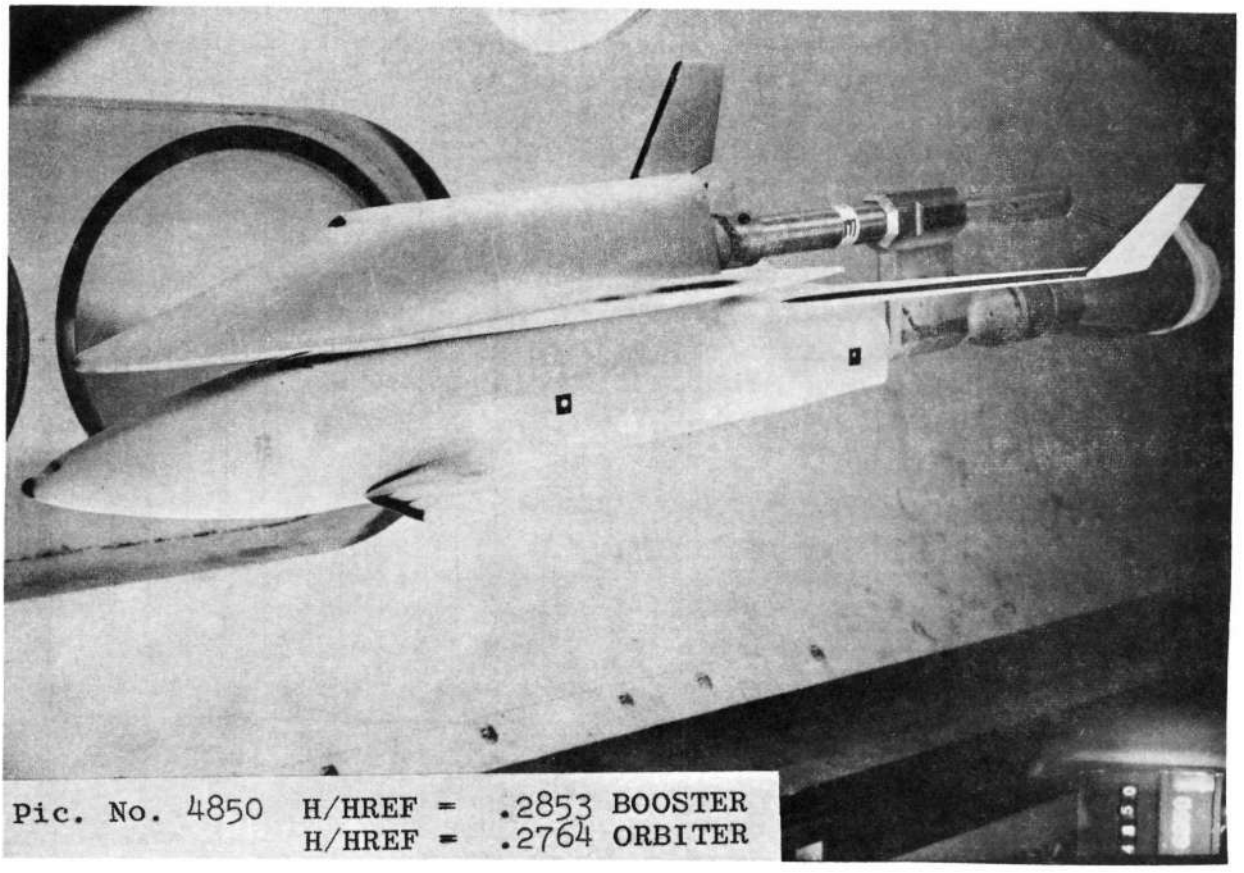
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .811FT)	STREF (R= .811FT)
88.0	.017	.728	3545	1.577E-05	7.084E-08	8.11E 05	2.633E-02	5.739E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXK)
TOP(T)	250		
SIDE(US)	250	AVERAGE TW = 76 (8)	=.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	250	AVERAGE TW = 82 (0)	

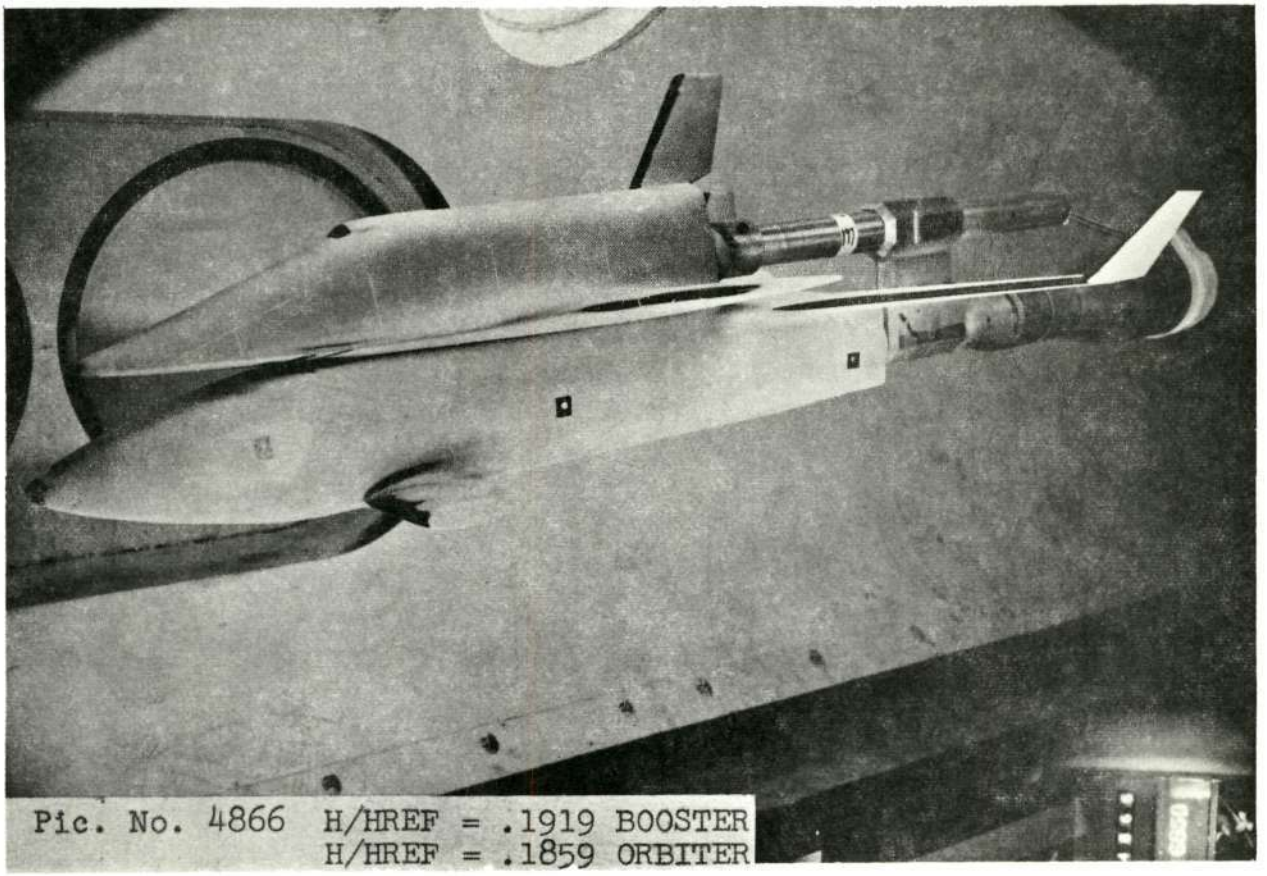
PIC NO	TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.8STO)	H(.8STO)/HREF	ST(TO)	MODEL	TEMP F		
US 4837	(250)	5.20	4.16	0	1.33E-02	.5036	1.732E-02	.6573	2.045E-02	.7762	2.876E-02	76	76	84	79
US 4837	(250)	5.20	4.16	R	1.37E-02	.5198	1.787E-02	.6782	2.110E-02	.8008	2.969E-02	76	76	84	79
US 4837	(250)	5.20	4.16	B	1.37E-02	.5198	1.787E-02	.6782	2.110E-02	.8008	2.969E-02	76	76	84	79
US 4837	(250)	5.20	4.16	0	1.33E-02	.5036	1.732E-02	.6573	2.045E-02	.7762	2.876E-02	76	76	84	79
US 4838	(250)	12.00	10.96	0	7.29E-03	.2764	9.512E-03	.3608	1.123E-02	.4261	1.578E-02	76	76	94	80
US 4838	(250)	12.00	10.96	B	7.52E-03	.2853	9.816E-03	.3723	1.159E-02	.4396	1.629E-02	76	76	94	80
US 4838	(250)	12.00	10.96	B	7.52E-03	.2853	9.816E-03	.3723	1.159E-02	.4396	1.629E-02	76	76	94	80
US 4838	(250)	12.00	10.96	0	7.29E-03	.2764	9.512E-03	.3608	1.123E-02	.4261	1.578E-02	76	76	94	80
US 4846	(250)	20.45	19.41	0	4.90E-03	.1859	6.398E-03	.2427	7.557E-03	.2866	1.061E-02	76	77	110	80
US 4846	(250)	20.45	19.41	B	5.06E-03	.1919	6.602E-03	.2504	7.795E-03	.2957	1.095E-02	76	77	110	80
US 4846	(250)	20.45	19.41	B	5.06E-03	.1919	6.602E-03	.2504	7.795E-03	.2957	1.095E-02	76	77	110	80
US 4846	(250)	20.45	19.41	0	4.90E-03	.1859	6.398E-03	.2427	7.557E-03	.2866	1.061E-02	76	77	110	80
US 4877	(250)	30.84	29.80	0	3.61E-03	.1331	4.582E-03	.1737	5.411E-03	.2052	7.596E-03	76	79	129	82
US 4877	(250)	30.84	29.80	B	3.62E-03	.1374	4.728E-03	.1792	5.582E-03	.2116	7.841E-03	76	79	129	82
US 4877	(250)	30.84	29.80	B	3.62E-03	.1374	4.728E-03	.1792	5.582E-03	.2116	7.841E-03	76	79	129	82
US 4877	(250)	30.84	29.80	0	3.61E-03	.1331	4.582E-03	.1737	5.411E-03	.2052	7.596E-03	76	79	129	82



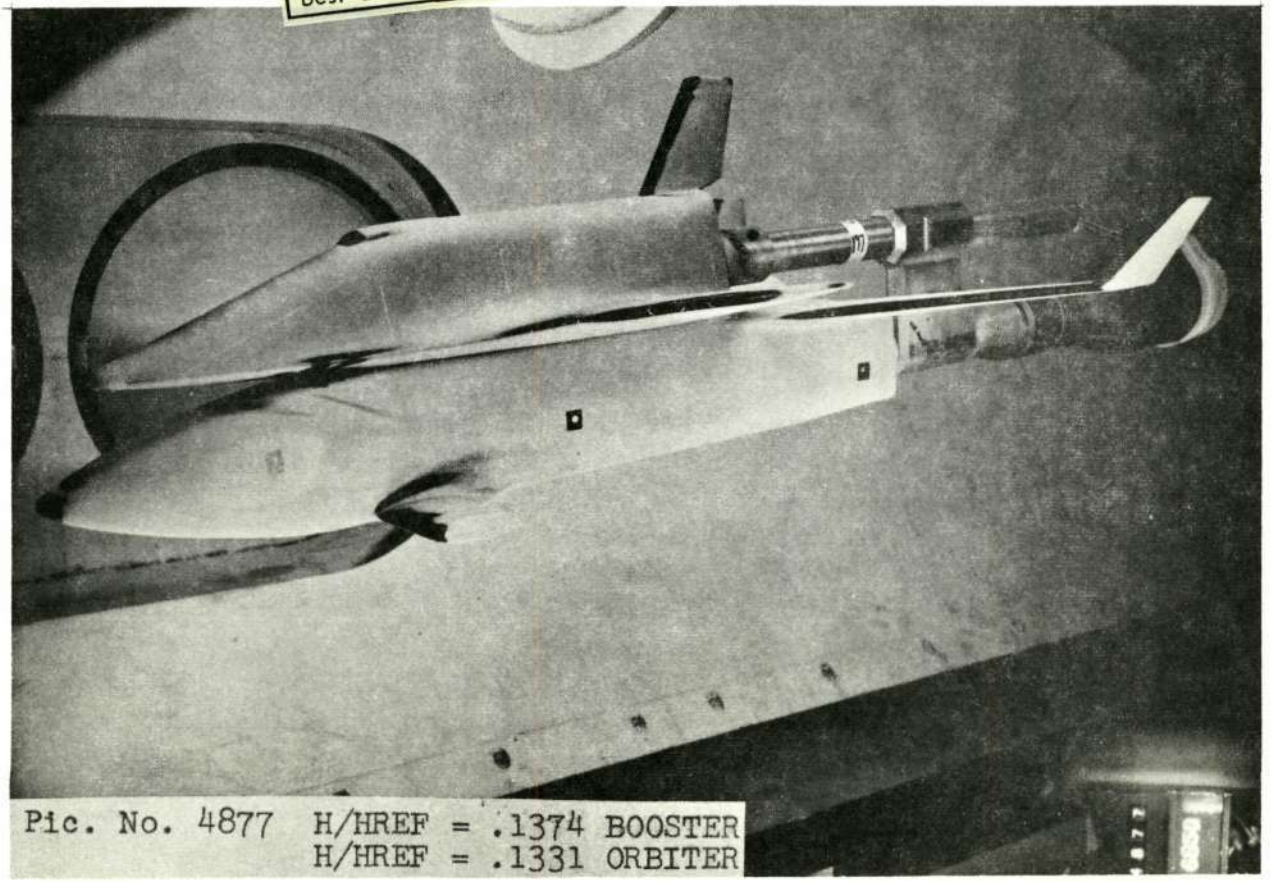
Pic. No. 4837 H/HREF = .5198 BOOSTER
H/HREF = .5036 ORBITER



Pic. No. 4850 H/HREF = .2853 BOOSTER
H/HREF = .2764 ORBITER



Pic. No. 4866 H/HREF = .1919 BOOSTER
H/HREF = .1859 ORBITER



Pic. No. 4877 H/HREF = .1374 BOOSTER
H/HREF = .1331 ORBITER

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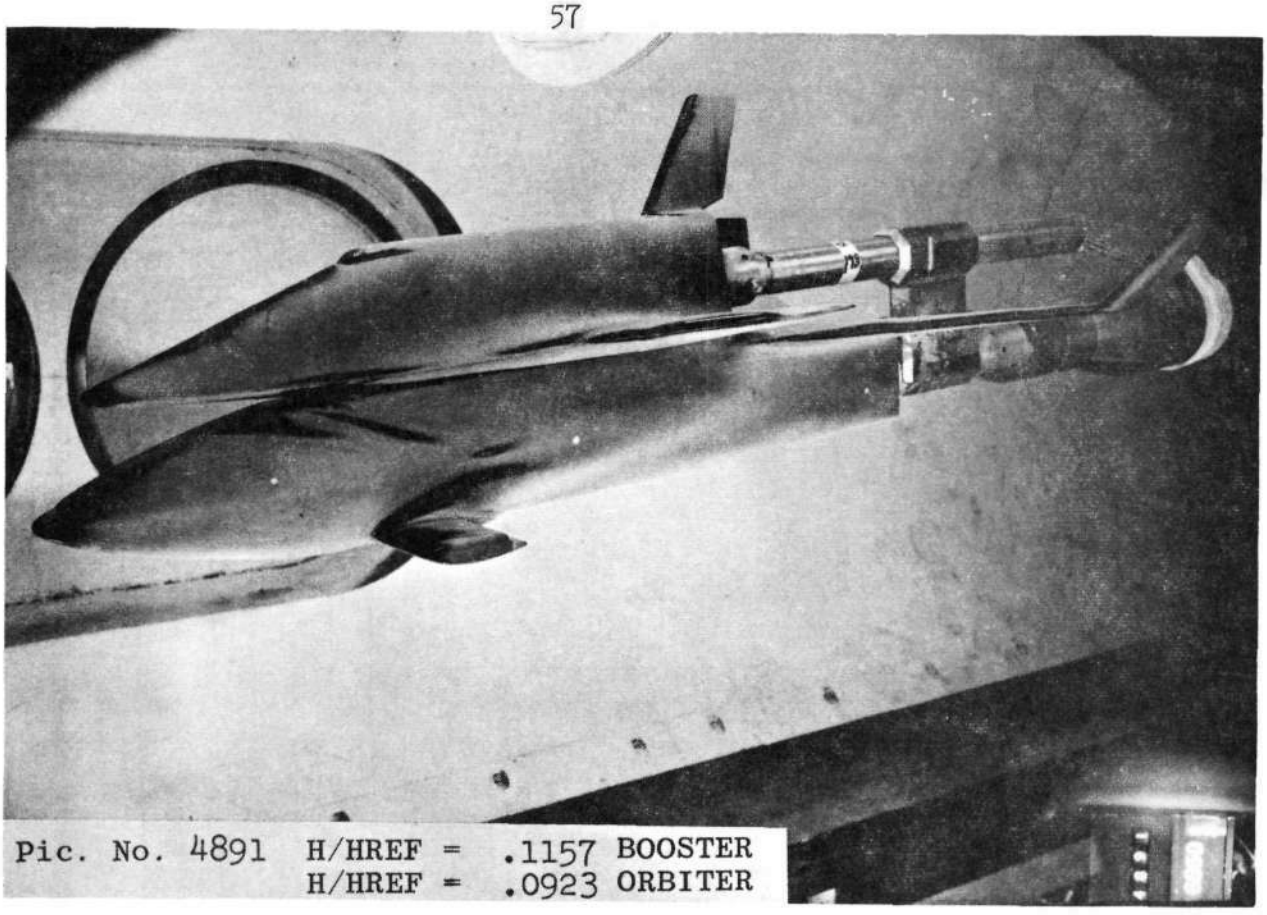
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
198	3221	MDAC-B+DWC	7.93	152.4	1192	-5.00	-5.00	0	0	0

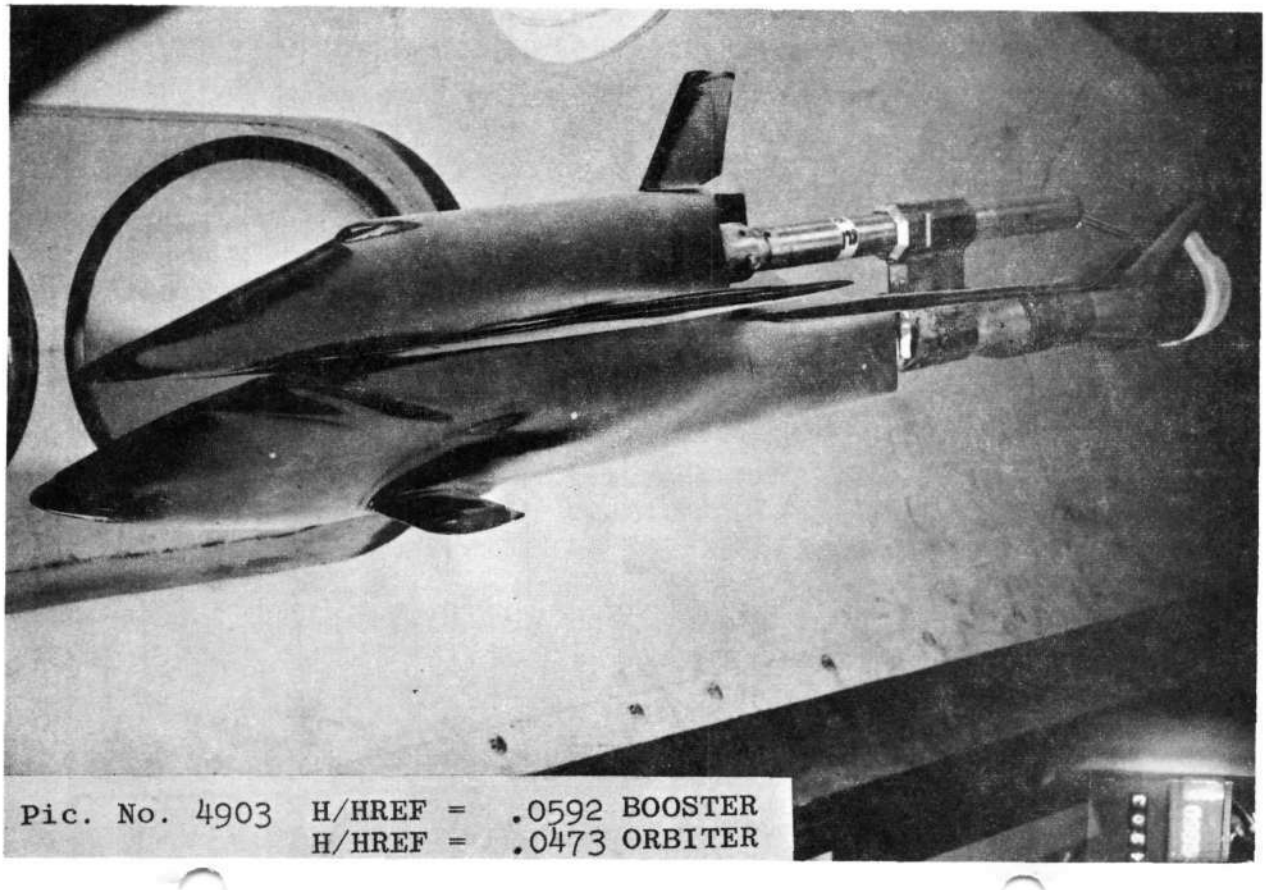
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .01 FT)	STREF (R= .01 FT)
87.8	.017	.727	3641	1.579E-05	7.069E-08	8.13E 05	2.633E-02	5.733E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXK)
TOP(T)	119		
SIDE(US)	500	AVERAGE Tw = 73 (R)	=.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	500	AVERAGE Tw = 81 (O)	

PIC NO		TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.8STO)	H(.8STO)/HREF	ST(TO)	MODEL TEMP F			
US 4891	(500)	4.20	3.13	0	7.07E-02	2.6954	1.344E-01	5.1052	2.524E-01	9.5852	1.511E-01	72	73	84	80
US 4891	(113)	4.20	3.13	8	3.05E-03	.1157	3.760E-03	.1428	4.261E-03	.1619	6.651E-03	72	73	84	80
US 4891	(500)	4.20	3.13	8	7.19E-02	2.7318	1.368E-01	5.1943	2.524E-01	9.5852	1.537E-01	72	73	84	80
US 4891	(113)	4.20	3.13	0	2.43E-03	.0923	3.000E-03	.1140	3.403E-03	.1293	5.305E-03	72	73	84	80
US 4903	(500)	10.55	9.48	0	3.42E-02	1.3749	6.882E-02	2.6138	1.292E-01	4.9074	7.738E-02	73	74	94	81
US 4903	(113)	10.55	9.48	8	1.56E-03	.0592	1.925E-03	.0731	2.182E-03	.0829	3.405E-03	73	74	94	81
US 4903	(500)	10.55	9.49	8	3.68E-02	1.3987	7.002E-02	2.6594	1.292E-01	4.9074	7.871E-02	73	74	94	81
US 4903	(113)	10.55	9.48	0	1.24E-03	.0473	1.536E-03	.0583	1.742E-03	.0662	2.716E-03	73	74	94	81
US 4917	(500)	18.05	16.98	0	2.44E-02	.9277	4.640E-02	1.7637	8.713E-02	3.3114	5.224E-02	74	75	109	84
US 4917	(113)	18.05	16.98	8	1.05E-03	.0400	1.298E-03	.0493	1.471E-03	.0559	2.299E-03	74	75	109	84
US 4917	(500)	18.05	16.98	8	2.48E-02	.9438	4.721E-02	1.7944	8.713E-02	3.3114	5.315E-02	74	75	109	84
US 4917	(113)	18.05	16.98	0	8.39E-04	.0319	1.036E-03	.0394	1.175E-03	.0447	1.834E-03	74	75	109	84
US 4931	(500)	32.89	31.82	0	1.40E-02	.5719	2.855E-02	1.0872	5.360E-02	2.0412	3.226E-02	76	77	132	87
US 4931	(113)	32.89	31.82	8	6.47E-04	.0266	7.985E-04	.0304	9.051E-04	.0345	1.420E-03	76	77	132	87
US 4931	(500)	32.89	31.82	8	1.43E-02	.5818	2.905E-02	1.1061	5.360E-02	2.0412	3.282E-02	76	77	132	87
US 4931	(113)	32.89	31.82	0	5.16E-04	.0197	6.373E-04	.0243	7.228E-04	.0275	1.133E-03	76	77	132	87



Pic. No. 4891 H/HREF = .1157 BOOSTER
H/HREF = .0923 ORBITER



Pic. No. 4903 H/HREF = .0592 BOOSTER
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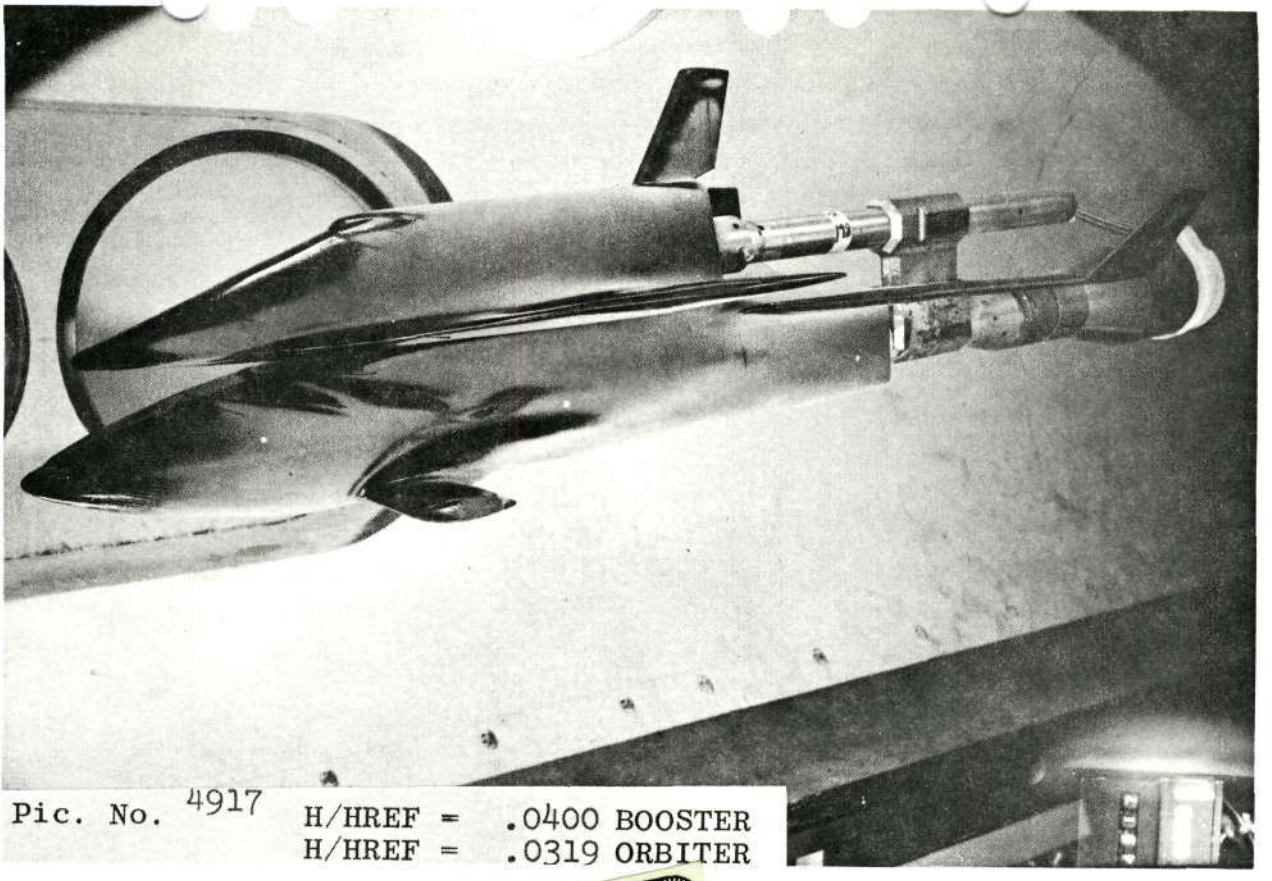
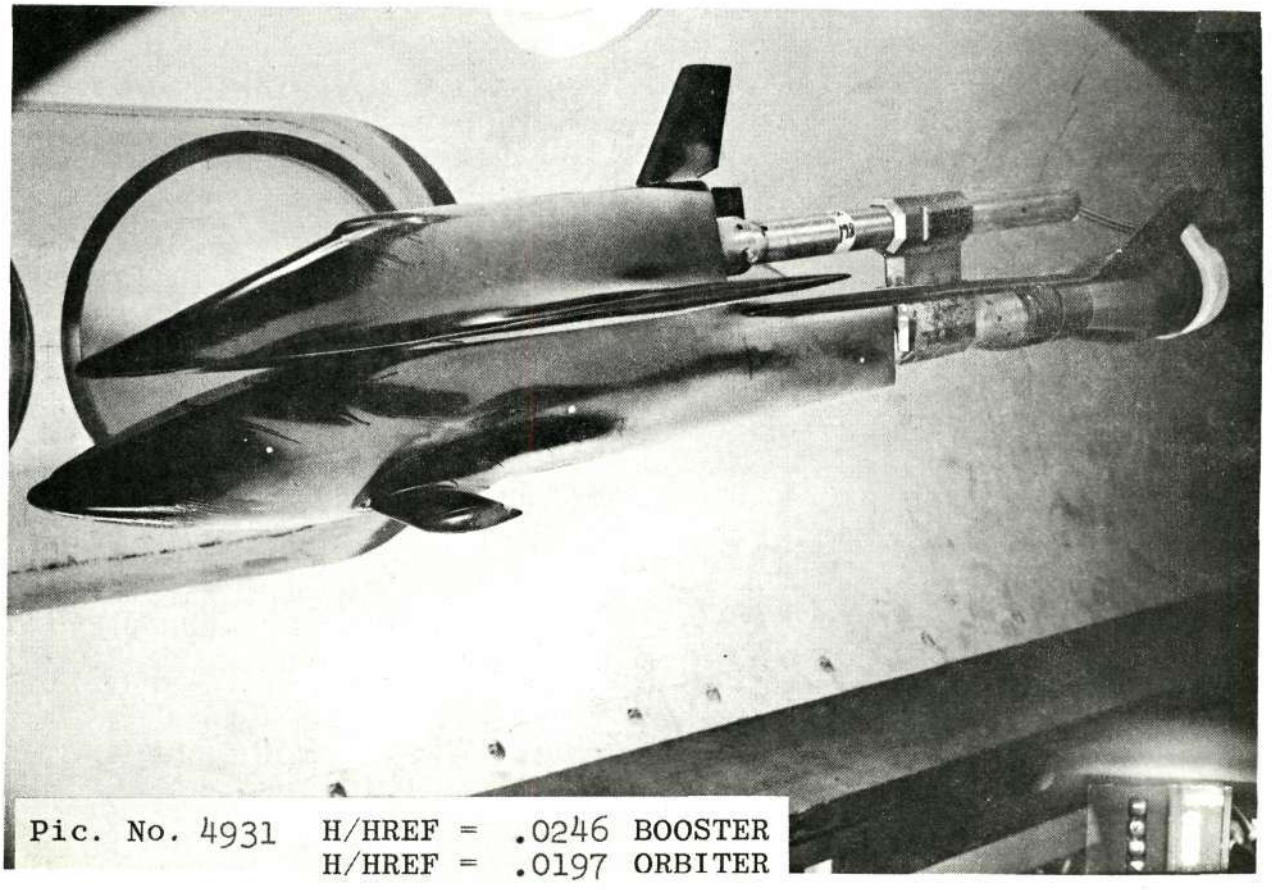
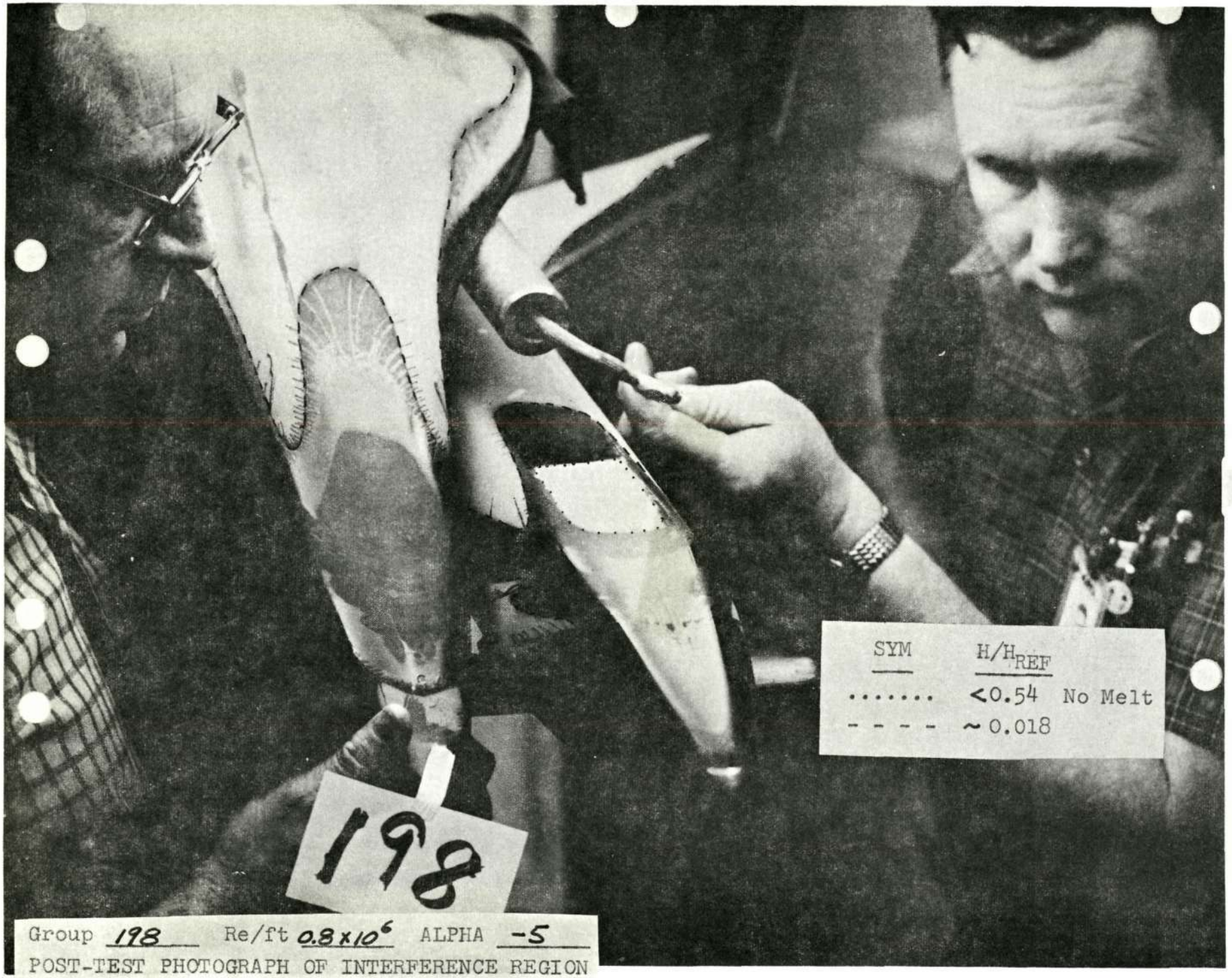


Pic. No. 4917 H/HREF = .0400 BOOSTER
H/HREF = .0319 ORBITER



Pic. No. 4931 H/HREF = .0246 BOOSTER
H/HREF = .0197 ORBITER



Group 198 Re/ft 0.8×10^6 ALPHA -5

POST-TEST PHOTOGRAPH OF INTERFERENCE REGION

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AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
199	3222	MDAC-B+NWC	7.93	149.9	1186	4.99	4.99	0	0	0

T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .011FT)	STREF (R= .011FT)
87.4	.016	.716	3632	1.561E-05	7.035E-08	8.06E 05	2.608E-02	5.764E-02

CAMERA

TOP(T)
SIDE(US)
SIDE(LS)

PAINT TEMP (DEG F)

250
400
400

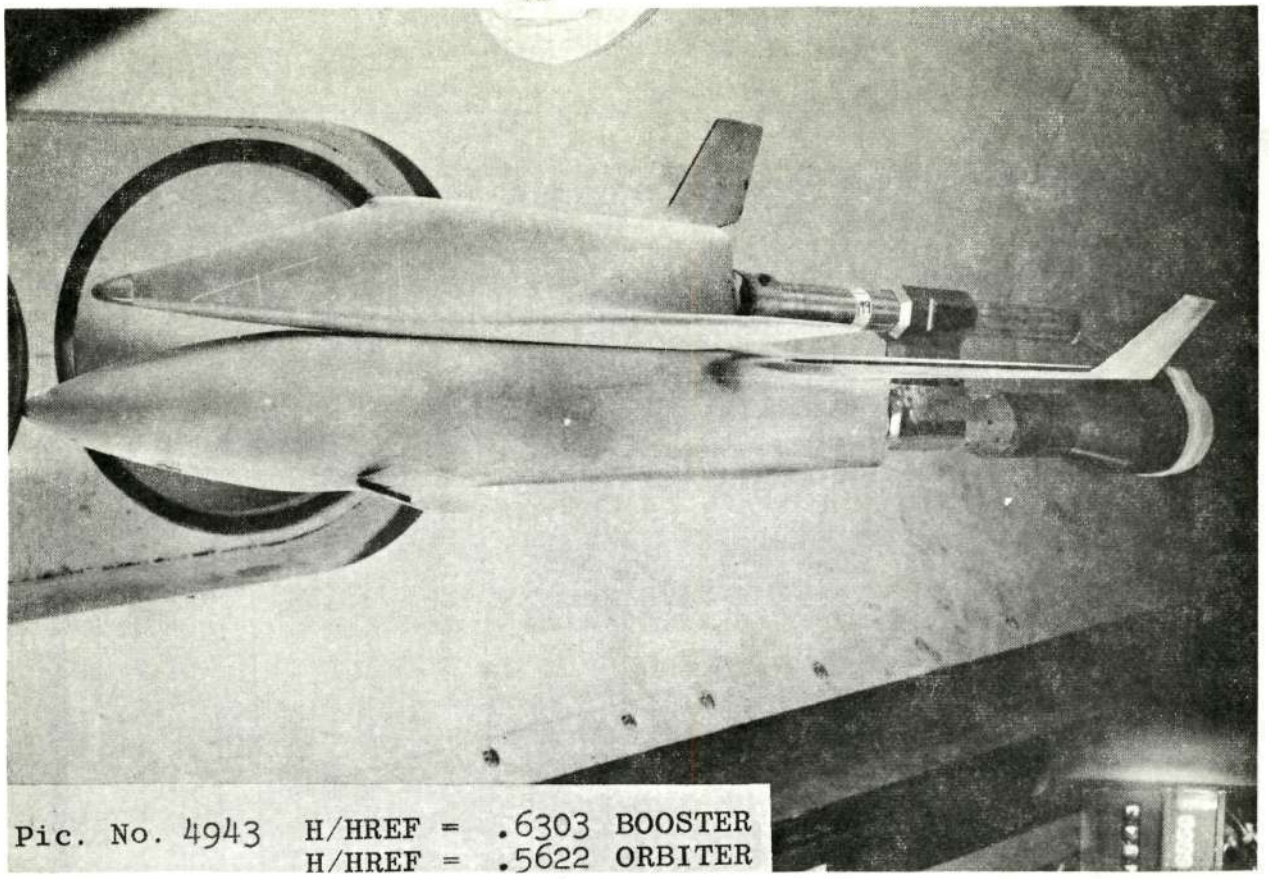
INITIAL TEMP (DEG F)

AVERAGE Tw = 75 (R)
AVERAGE Tw = 95 (G)

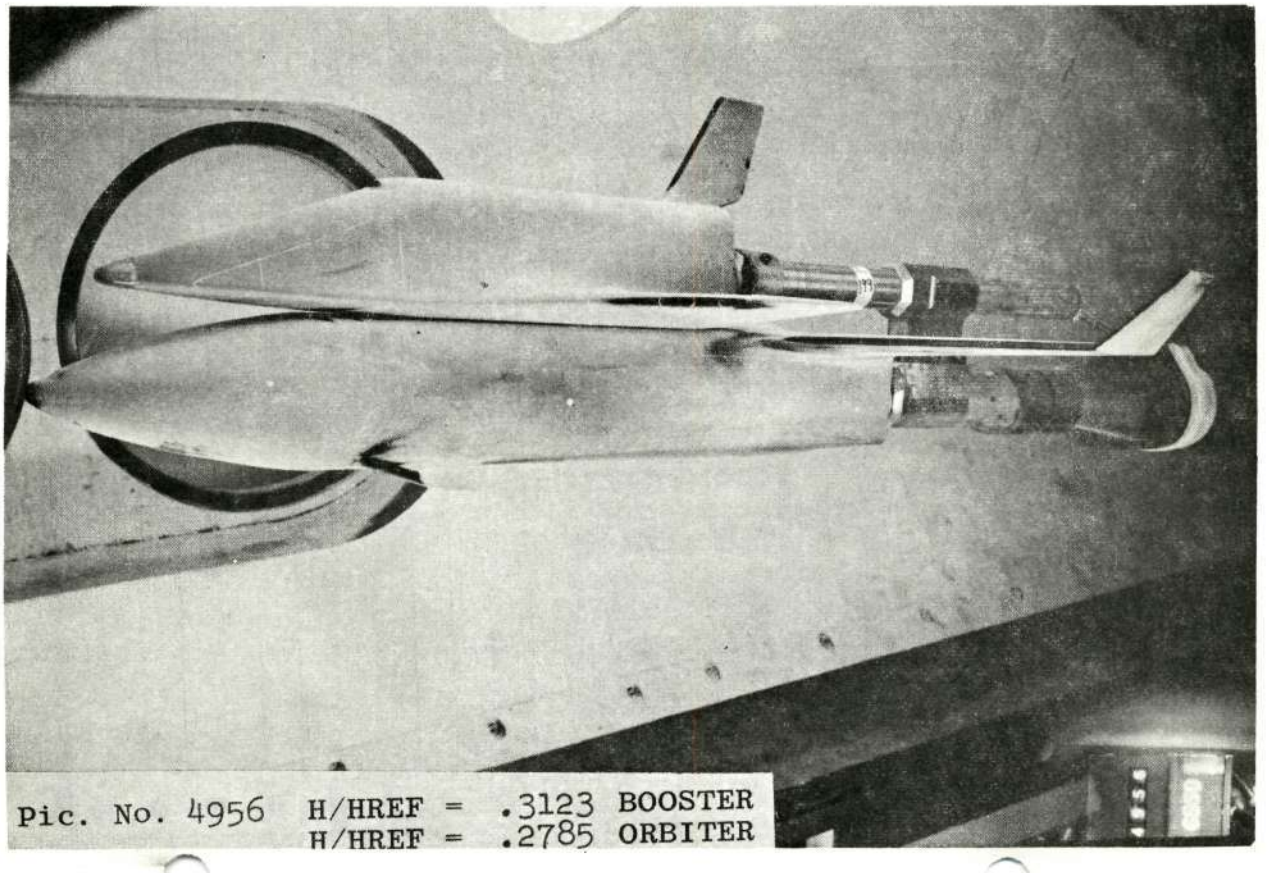
SQUARE ROOT (RHOXCXX)

=.008(SQUARE ROOT DEL TIME) + 0.11

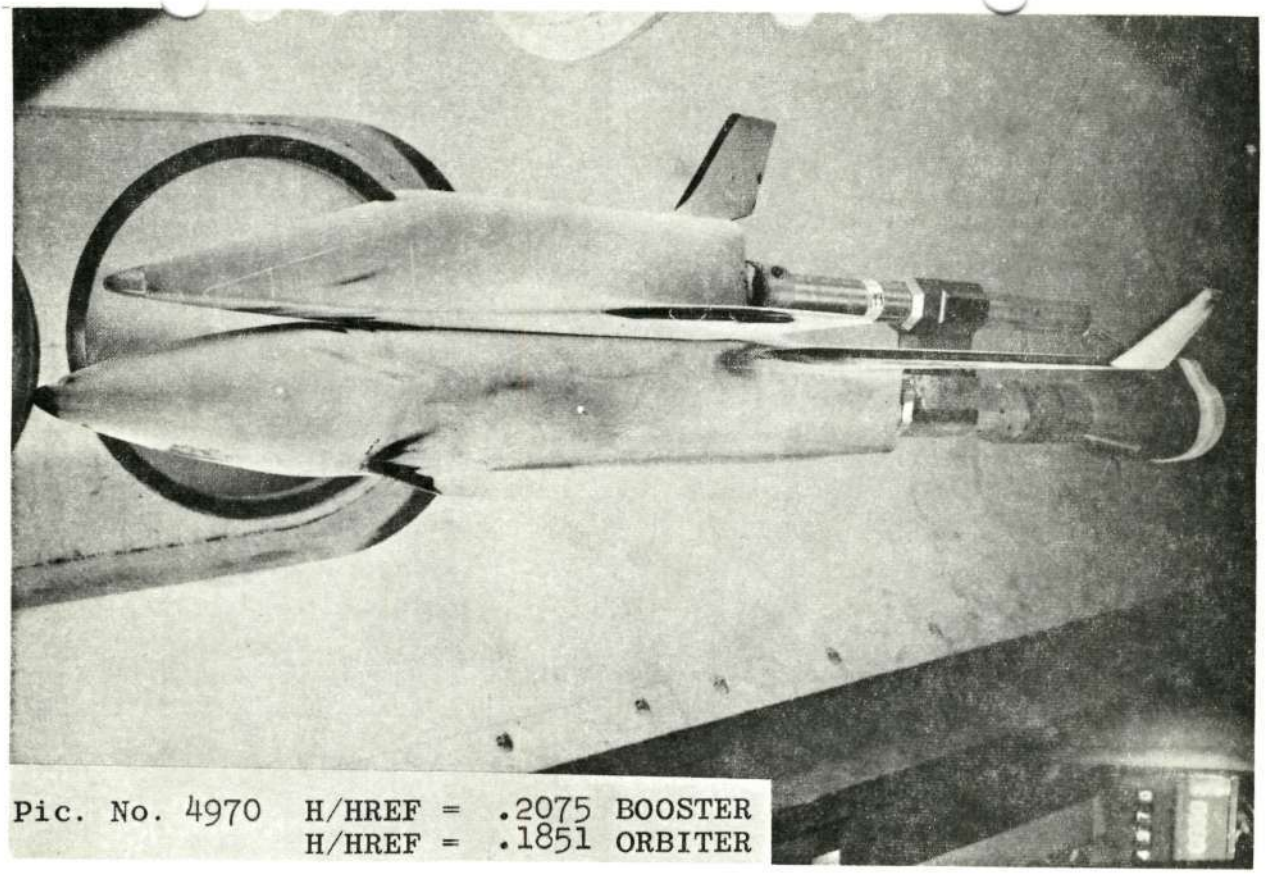
PIC NO		TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.85TO)	H(.85TO)/HREF	ST(TO)	MODEL TEMP F			
US 4962	(400)	4.20	3.14	0	3.90E-02	1.4949	5.054E-02	2.2444	7.898E-02	3.0280	8.507E-02	74	74	98	90
US 4962	(250)	4.20	3.16	8	1.64E-02	.6303	2.151E-02	.8246	2.546E-02	.9760	3.616E-02	74	74	98	90
US 4962	(400)	4.20	3.14	8	4.13E-02	1.5832	6.195E-02	2.3750	8.355E-02	3.2033	9.009E-02	74	74	98	90
US 4962	(250)	4.20	3.16	0	1.47E-02	.5622	1.921E-02	.7365	2.276E-02	.8725	3.225E-02	74	74	98	90
US 4956	(400)	11.10	10.04	0	1.93E-02	.7406	2.899E-02	1.1120	3.912E-02	1.5002	4.216E-02	75	75	108	91
US 4956	(250)	11.10	10.04	8	8.14E-03	.3123	1.065E-02	.4086	1.261E-02	.4836	1.792E-02	75	75	108	91
US 4956	(400)	11.10	10.06	8	2.05E-02	.7844	3.068E-02	1.1767	4.138E-02	1.5870	4.465E-02	75	75	108	91
US 4956	(250)	11.10	10.06	0	7.26E-03	.2785	9.514E-03	.3649	1.127E-02	.4323	1.598E-02	75	75	108	91
US 4970	(400)	19.30	18.24	0	1.28E-02	.4922	1.928E-02	.7398	2.601E-02	.9978	2.800E-02	75	75	120	91
US 4970	(250)	19.30	18.24	8	5.41E-03	.2075	7.084E-03	.2715	8.385E-03	.3214	1.190E-02	75	75	120	91
US 4970	(400)	19.30	18.24	8	1.36E-02	.5213	2.040E-02	.7820	2.752E-02	1.0547	2.965E-02	75	75	120	91
US 4970	(250)	19.30	18.26	0	4.83E-03	.1851	6.327E-03	.2425	7.495E-03	.2873	1.061E-02	75	75	120	91
US 4983	(400)	32.94	31.94	0	8.31E-03	.3185	1.247E-02	.4781	1.683E-02	.6451	1.812E-02	75	76	136	91
US 4983	(250)	32.94	31.94	8	3.50E-03	.1343	4.582E-03	.1757	5.423E-03	.2079	7.703E-03	75	76	136	91
US 4983	(400)	32.94	31.94	8	8.80E-03	.3373	1.320E-02	.5060	1.780E-02	.6824	1.919E-02	75	76	136	91
US 4983	(250)	32.94	31.94	0	3.12E-03	.1198	4.092E-03	.1569	4.848E-03	.1859	6.871E-03	75	76	136	91



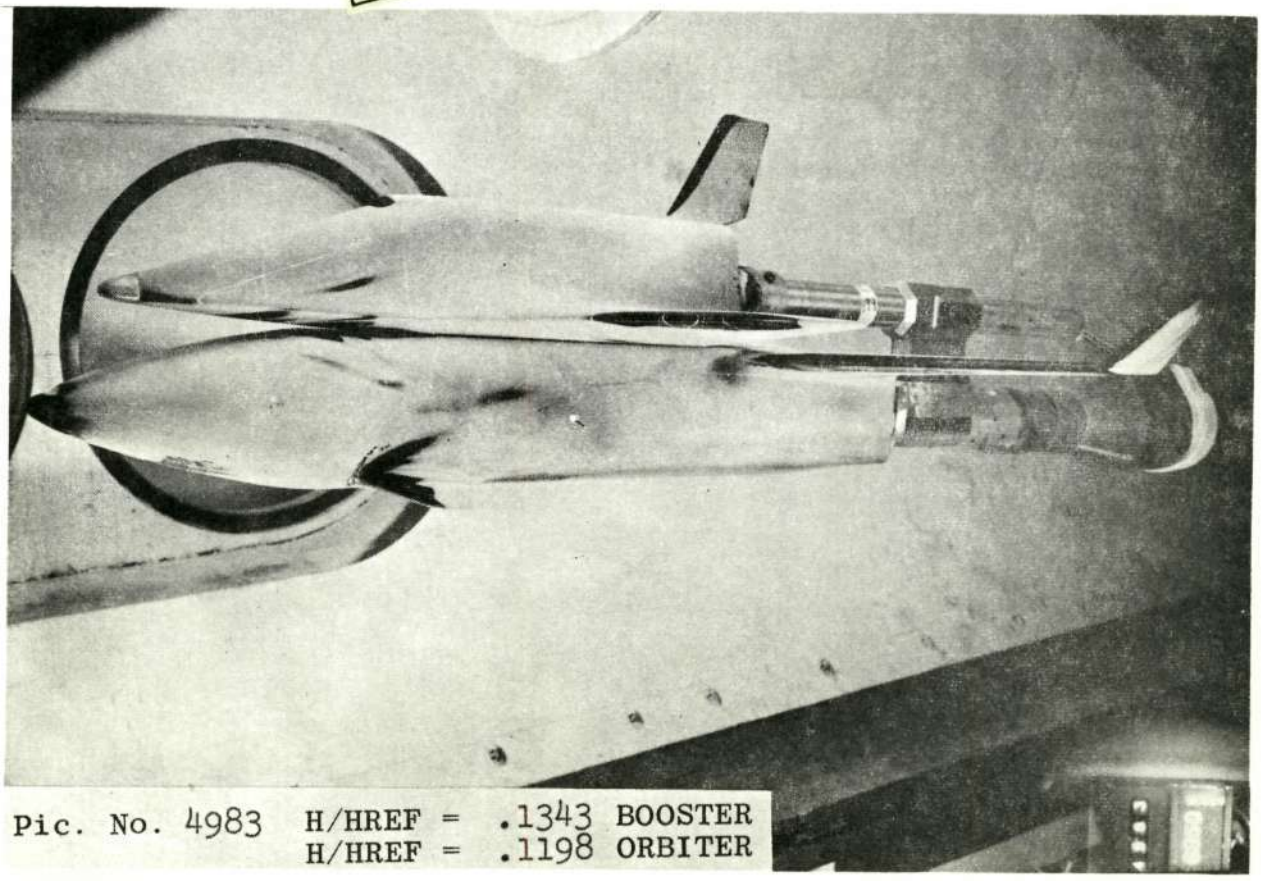
Pic. No. 4943 H/HREF = .6303 BOOSTER
H/HREF = .5622 ORBITER



Pic. No. 4956 H/HREF = .3123 BOOSTER
H/HREF = .2785 ORBITER



Pic. No. 4970 H/HREF = .2075 BOOSTER
H/HREF = .1851 ORBITER



Pic. No. 4983 H/HREF = .1343 BOOSTER
H/HREF = .1198 ORBITER

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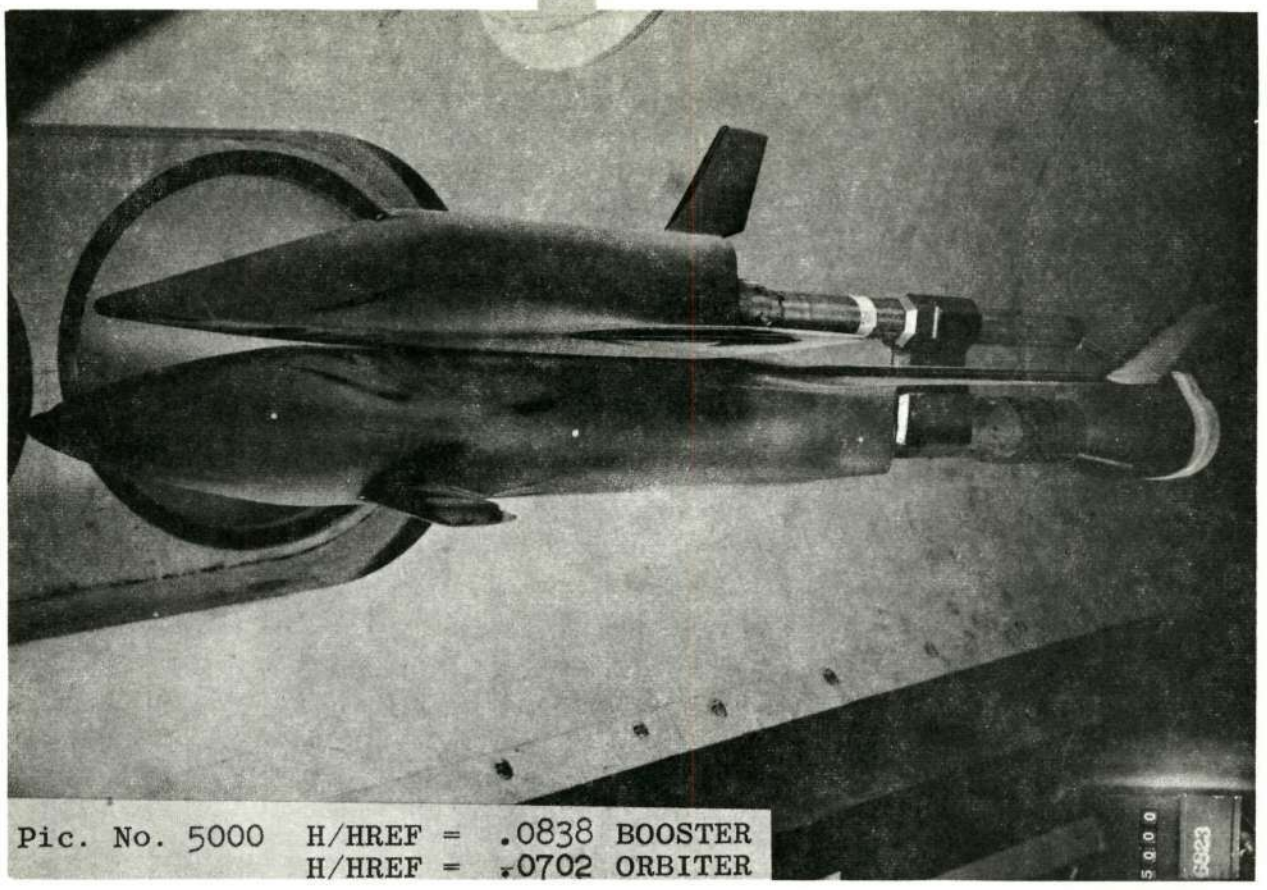
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
200	3221	MDAC-A-DWC	7.93	146.8	1183	5.02	5.02	0	0	0

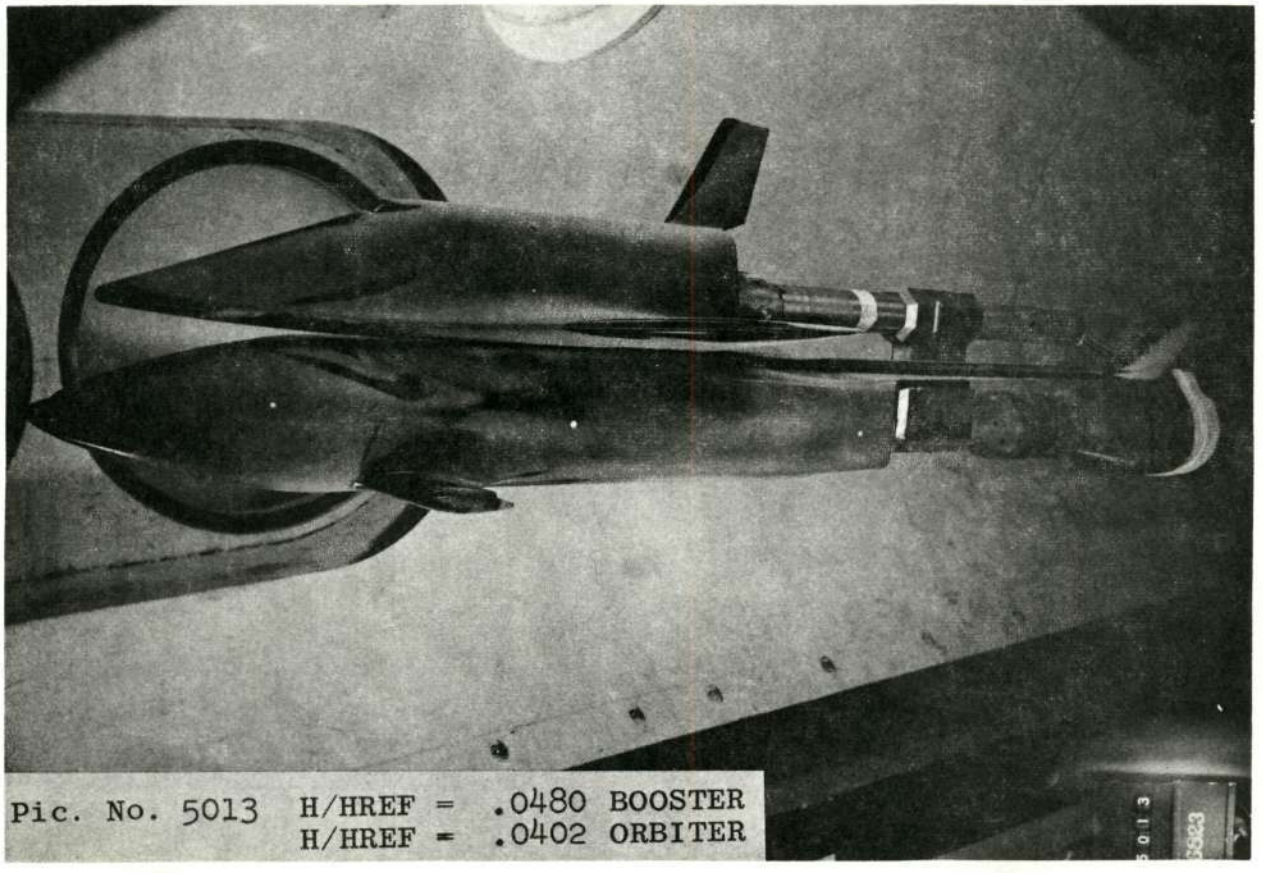
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .01)FT)	STREF (R= .01)FT)
87.1	.816	.701	3627	1.533E-05	7.813E-08	7.93E 05	2.579E-02	5.814E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXX)
TOP(T)	113		
SIDE(US)	113	AVERAGE Tw = 78 (R)	=.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	113	AVERAGE Tw = 84 (0)	

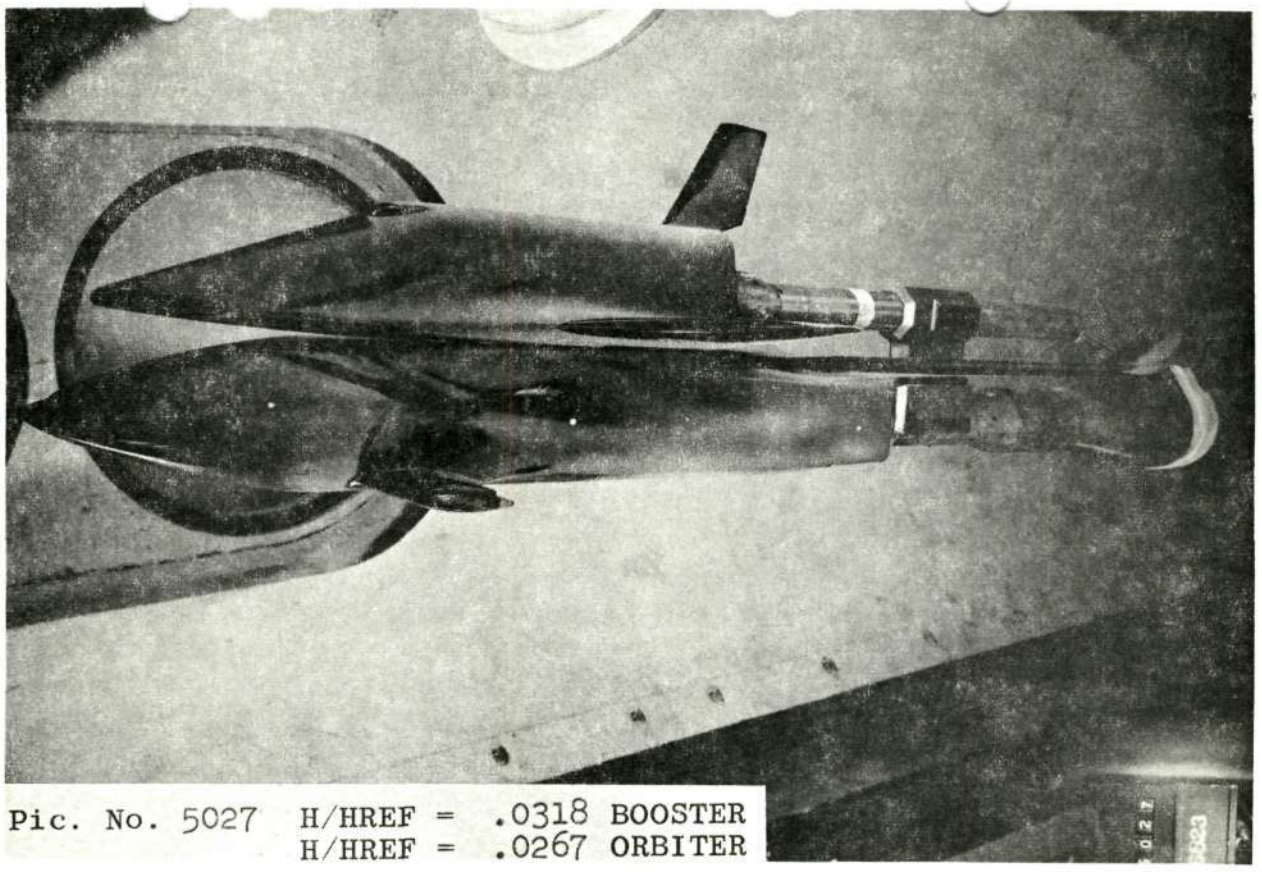
PIC NO	TIME	DELTIME	M(TO)	M(TO)/MREF	M(.9TO)	M(.9TO)/MREF	M(.85TO)	M(.85TO)/MREF	ST(TO)	MODEL TEMP F			
US 5000 (113)	5.75	4.71	0 1.81E-03	.0702	2.241E-03	.0869	2.543E-03	.0986	4.093E-03	77	77	85	83
US 5000 (113)	5.75	4.71	B 2.16E-03	.0838	2.675E-03	.1037	3.034E-03	.1176	4.888E-03	77	77	85	83
US 5000 (113)	5.75	4.71	B 2.16E-03	.0838	2.675E-03	.1037	3.034E-03	.1176	4.888E-03	77	77	85	83
US 5000 (113)	5.75	4.71	0 1.81E-03	.0702	2.241E-03	.0869	2.543E-03	.0986	4.093E-03	77	77	85	83
US 5013 (113)	12.55	11.51	0 1.04E-03	.0402	1.282E-03	.0497	1.455E-03	.0564	2.342E-03	80	77	96	83
US 5013 (113)	12.55	11.51	B 1.24E-03	.0480	1.531E-03	.0593	1.736E-03	.0673	2.797E-03	80	77	96	83
US 5013 (113)	12.55	11.51	B 1.24E-03	.0480	1.531E-03	.0593	1.736E-03	.0673	2.797E-03	80	77	96	83
US 5013 (113)	12.55	11.51	0 1.04E-03	.0402	1.282E-03	.0497	1.455E-03	.0564	2.342E-03	80	77	96	83
US 5027 (113)	21.65	20.61	0 6.89E-04	.0267	8.520E-04	.0330	9.672E-04	.0375	1.553E-03	85	78	111	85
US 5027 (113)	21.65	20.61	B 8.22E-04	.0318	1.017E-03	.0394	1.154E-03	.0447	1.855E-03	85	78	111	85
US 5027 (113)	21.65	20.61	B 8.22E-04	.0318	1.017E-03	.0394	1.154E-03	.0447	1.855E-03	85	78	111	85
US 5027 (113)	21.65	20.61	0 6.89E-04	.0267	8.520E-04	.0330	9.672E-04	.0375	1.553E-03	85	78	111	85
US 5039 (113)	34.29	33.25	0 4.70E-04	.0182	5.815E-04	.0225	6.601E-04	.0256	1.060E-03	92	79	130	84
US 5039 (113)	34.29	33.25	B 5.61E-04	.0217	6.943E-04	.0269	7.875E-04	.0305	1.266E-03	92	79	130	84
US 5039 (113)	34.29	33.25	B 5.61E-04	.0217	6.943E-04	.0269	7.875E-04	.0305	1.266E-03	92	79	130	84
US 5039 (113)	34.29	33.25	0 4.70E-04	.0182	5.815E-04	.0225	6.601E-04	.0256	1.060E-03	92	79	130	84



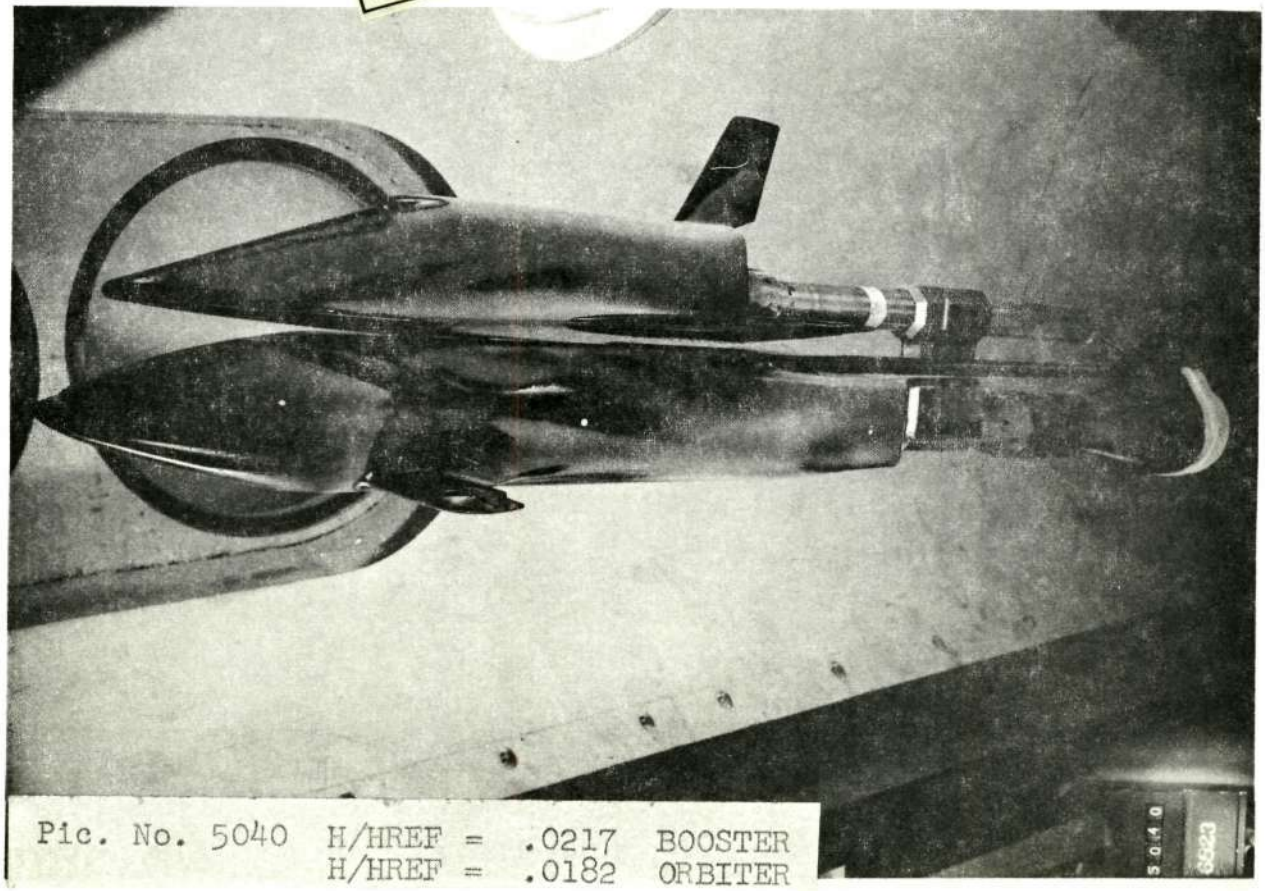
Pic. No. 5000 H/HREF = .0838 BOOSTER
H/HREF = .0702 ORBITER



Pic. No. 5013 H/HREF = .0480 BOOSTER
H/HREF = .0402 ORBITER



Pic. No. 5027 H/HREF = .0318 BOOSTER
H/HREF = .0267 ORBITER



Pic. No. 5040 H/HREF = .0217 BOOSTER
H/HREF = .0182 ORBITER

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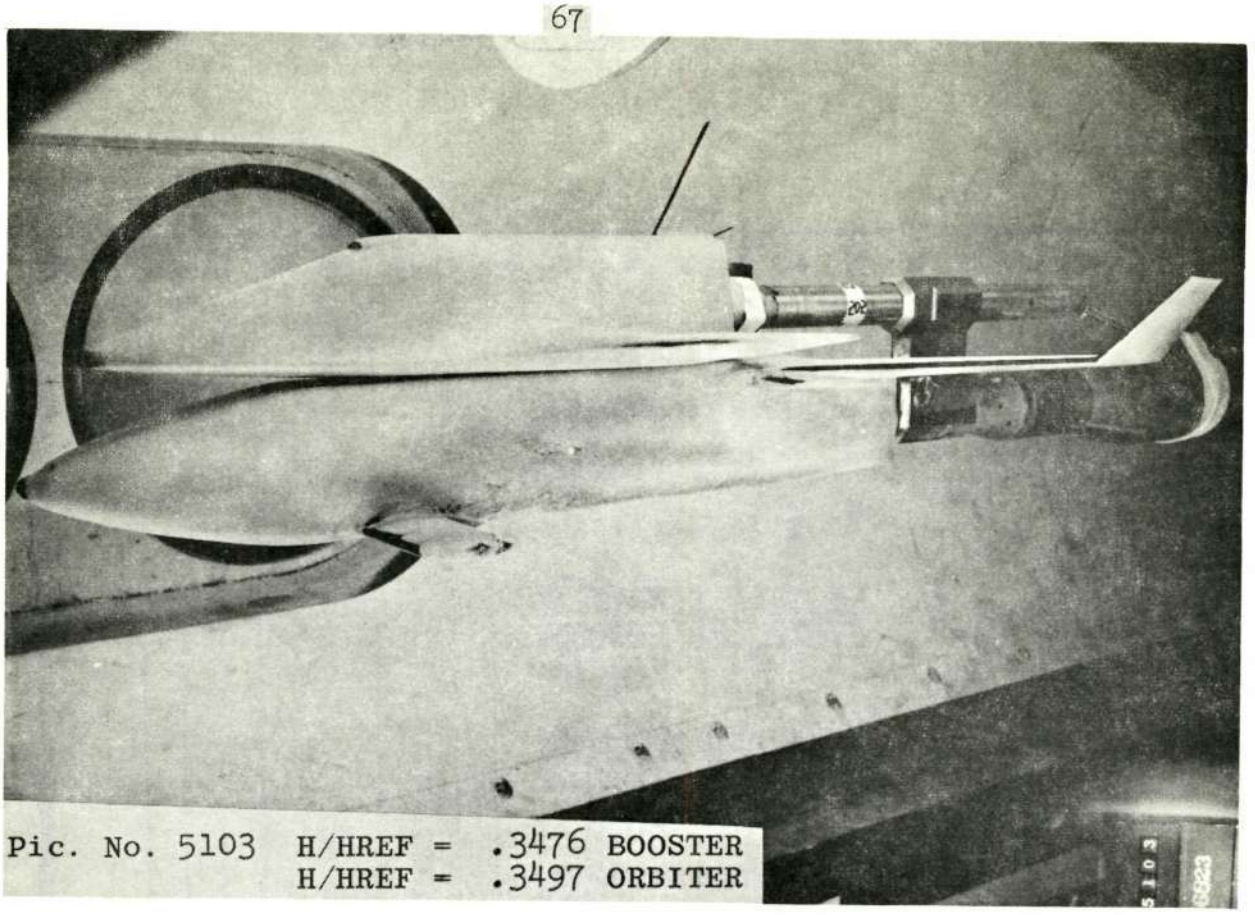
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
202	1221	PDAC-8-DWO	8.00	550.6	1326	.03	.03	0	0	0

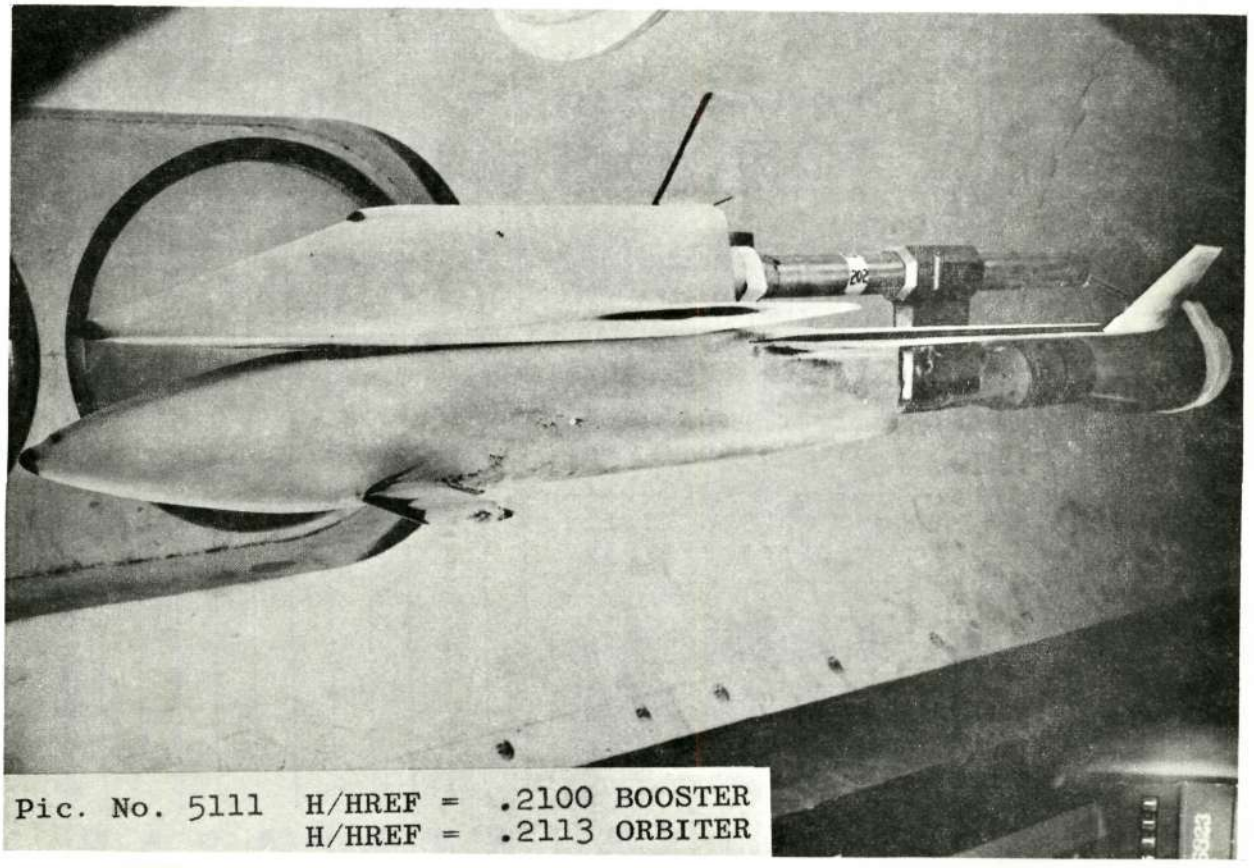
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .0111FT)	STREF (R= .0111FT)
96.1	.056	2.527	3842	4.926E-05	7.734E-08	2.45E 06	4.996E-02	3.282E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXK)
TOP(T)	300		
SIDE(US)	500	AVERAGE TW = 80 (F)	-.008(SQUARE ROOT DEL TIME) + 0-111
SIDE(LS)	500	AVERAGE TW = 78 (C)	

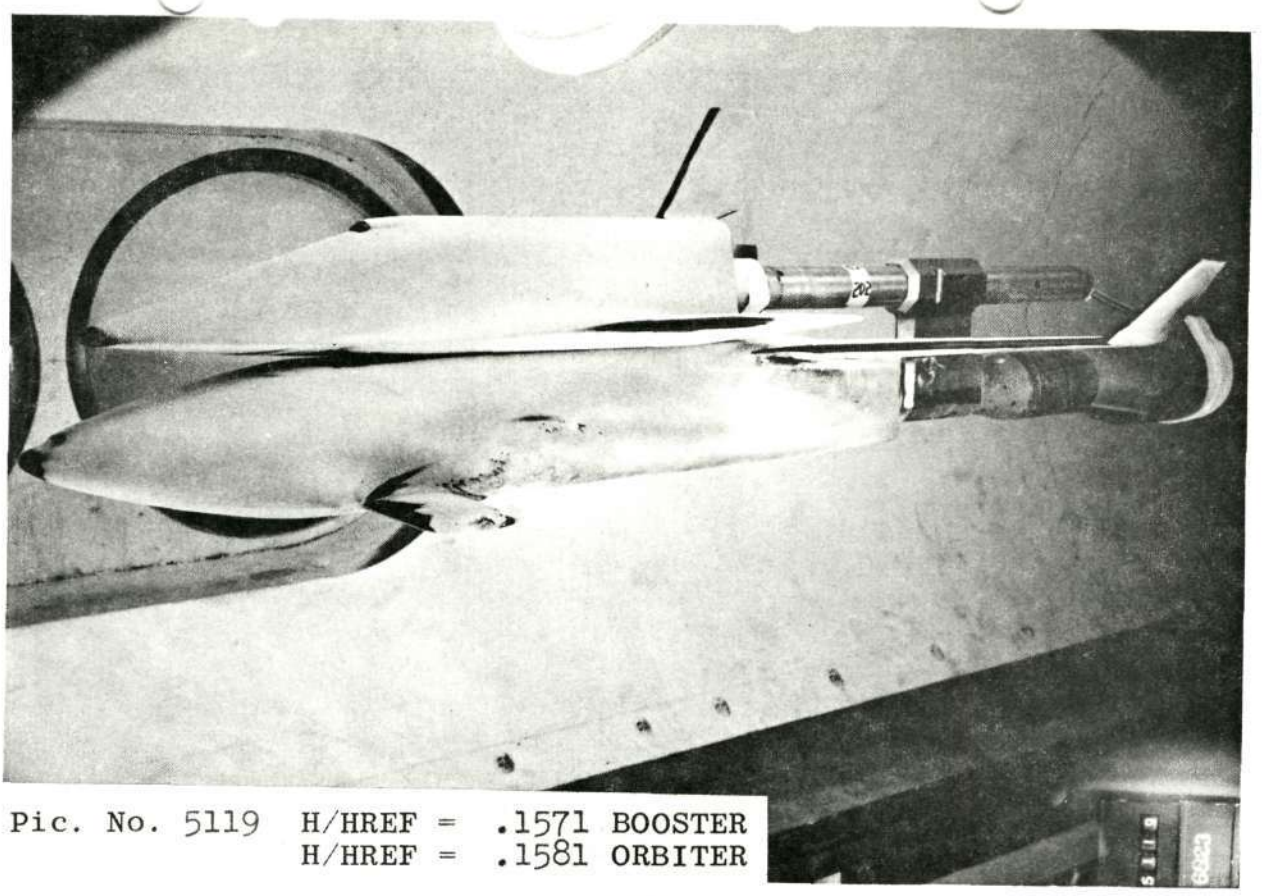
PIC NO	TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.85TO)	H(.85TO)/HREF	ST(TO)	MODEL TEMP F			
US 5103 (500)	4.20	3.14	0	4.72E-02	.9451	7.068E-02	1.4156	9.527E-02	1.9071	3.047E-02	80	79	82	76
US 5103 (300)	4.20	3.14	R	1.74E-02	.3476	2.231E-02	.4466	2.603E-02	.5210	1.133E-02	80	79	82	76
US 5103 (500)	4.20	3.14	B	4.71E-02	.9423	7.048E-02	1.4108	9.499E-02	1.9016	3.038E-02	80	79	82	76
US 5103 (300)	4.20	3.14	0	1.75E-02	.3497	2.244E-02	.4492	2.618E-02	.5241	1.139E-02	80	79	82	76
US 5111 (500)	8.40	7.34	0	2.85E-02	.5710	4.270E-02	.8549	5.755E-02	1.1523	1.841E-02	83	80	94	77
US 5111 (300)	8.40	7.34	B	1.05E-02	.2100	1.348E-02	.2698	1.572E-02	.3148	6.844E-03	83	80	94	77
US 5111 (500)	8.40	7.36	B	2.84E-02	.5693	4.258E-02	.8524	5.739E-02	1.1489	1.836E-02	83	80	94	77
US 5111 (300)	8.40	7.34	0	1.06E-02	.2113	1.356E-02	.2714	1.582E-02	.3146	6.885E-03	83	80	94	77
US 5119 (500)	12.60	11.54	0	2.13E-02	.4273	3.195E-02	.6397	4.307E-02	.8622	1.378E-02	89	80	109	78
US 5119 (300)	12.60	11.54	B	7.85E-03	.1571	1.008E-02	.2019	1.177E-02	.2356	5.121E-03	89	80	109	78
US 5119 (500)	12.60	11.54	B	2.13E-02	.4268	3.186E-02	.6378	4.294E-02	.8597	1.374E-02	89	80	109	78
US 5119 (300)	12.60	11.54	0	7.90E-03	.1581	1.014E-02	.2031	1.183E-02	.2369	5.152E-03	89	80	109	78
US 5128 (500)	17.30	16.24	0	1.69E-02	.3384	2.530E-02	.5066	3.410E-02	.6828	1.091E-02	97	81	125	79
US 5128 (300)	17.30	16.24	B	6.21E-03	.1245	7.984E-03	.1599	9.315E-03	.1866	4.057E-03	97	81	125	79
US 5128 (500)	17.30	16.24	B	1.68E-02	.3374	2.522E-02	.5052	3.400E-02	.6809	1.088E-02	97	81	125	79
US 5128 (300)	17.30	16.24	0	6.25E-03	.1252	8.030E-03	.1608	9.369E-03	.1876	4.082E-03	97	81	125	79



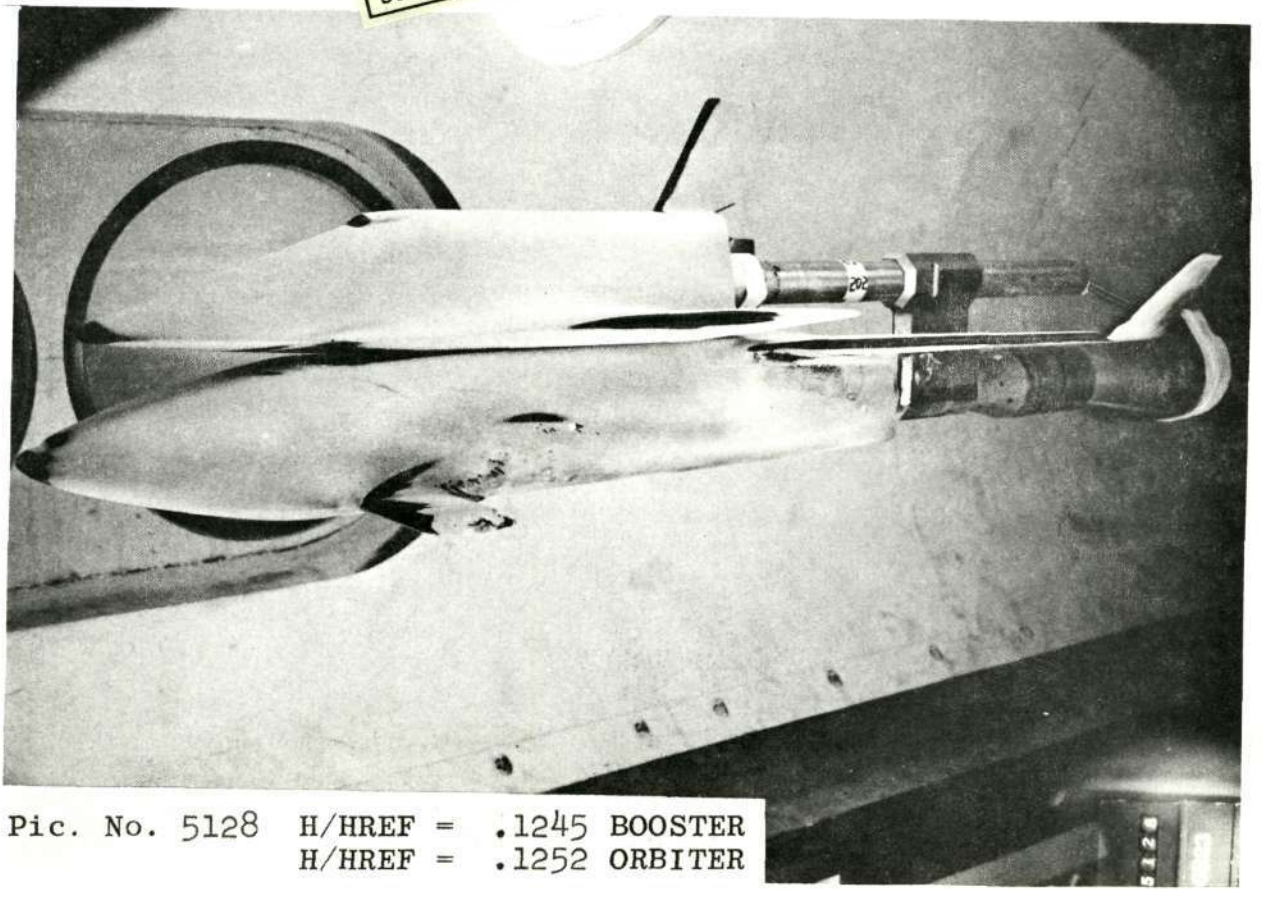
Pic. No. 5103 H/HREF = .3476 BOOSTER
H/HREF = .3497 ORBITER



Pic. No. 5111 H/HREF = .2100 BOOSTER
H/HREF = .2113 ORBITER

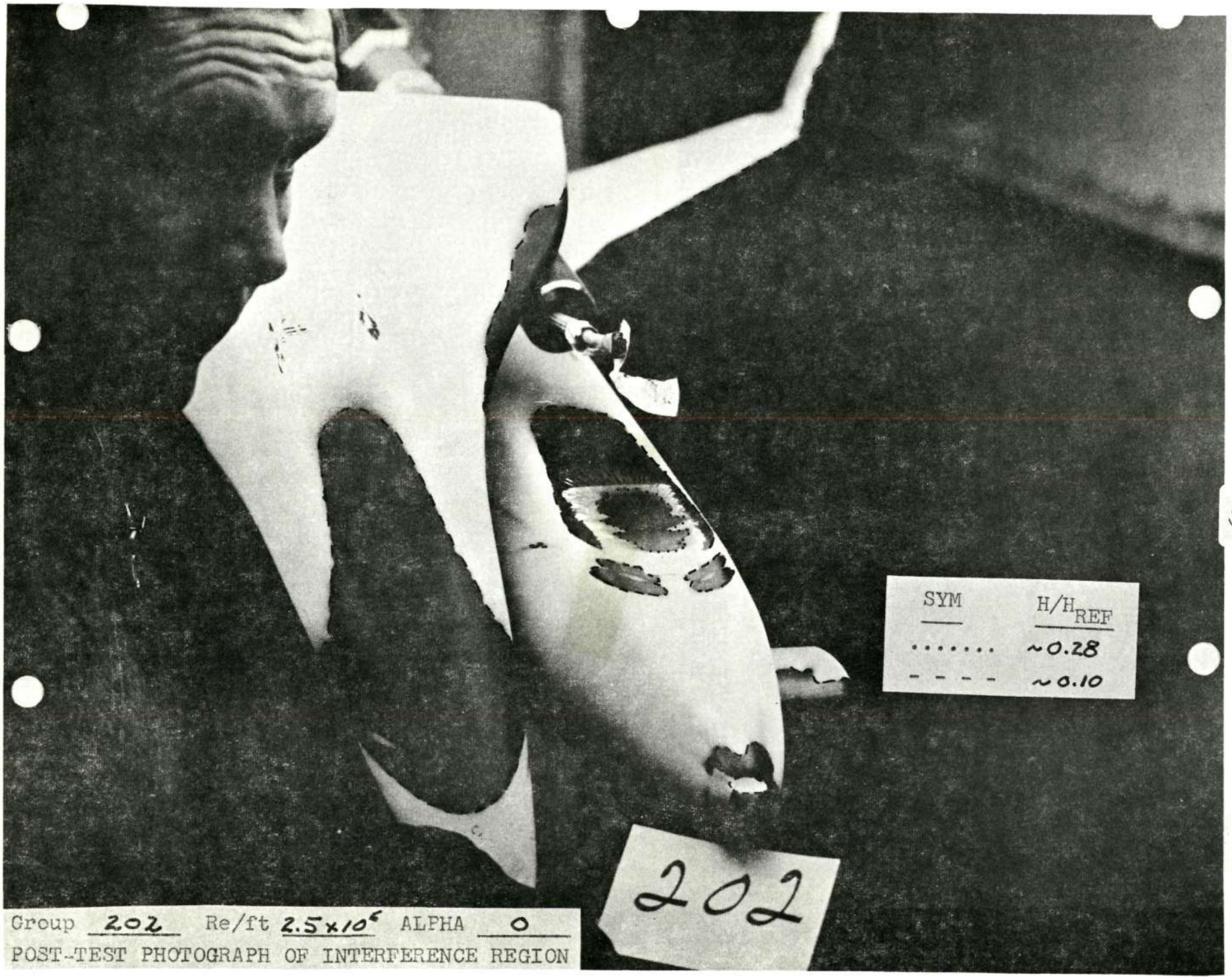


Pic. No. 5119 H/HREF = .1571 BOOSTER
H/HREF = .1581 ORBITER



Pic. No. 5128 H/HREF = .1245 BOOSTER
H/HREF = .1252 ORBITER

Group 202 Re/ft 2.45E 06 ALPHA 0



Group 202 Re/ft 2.5x10^6 ALPHA 0

POST-TEST PHOTOGRAPH OF INTERFERENCE REGION

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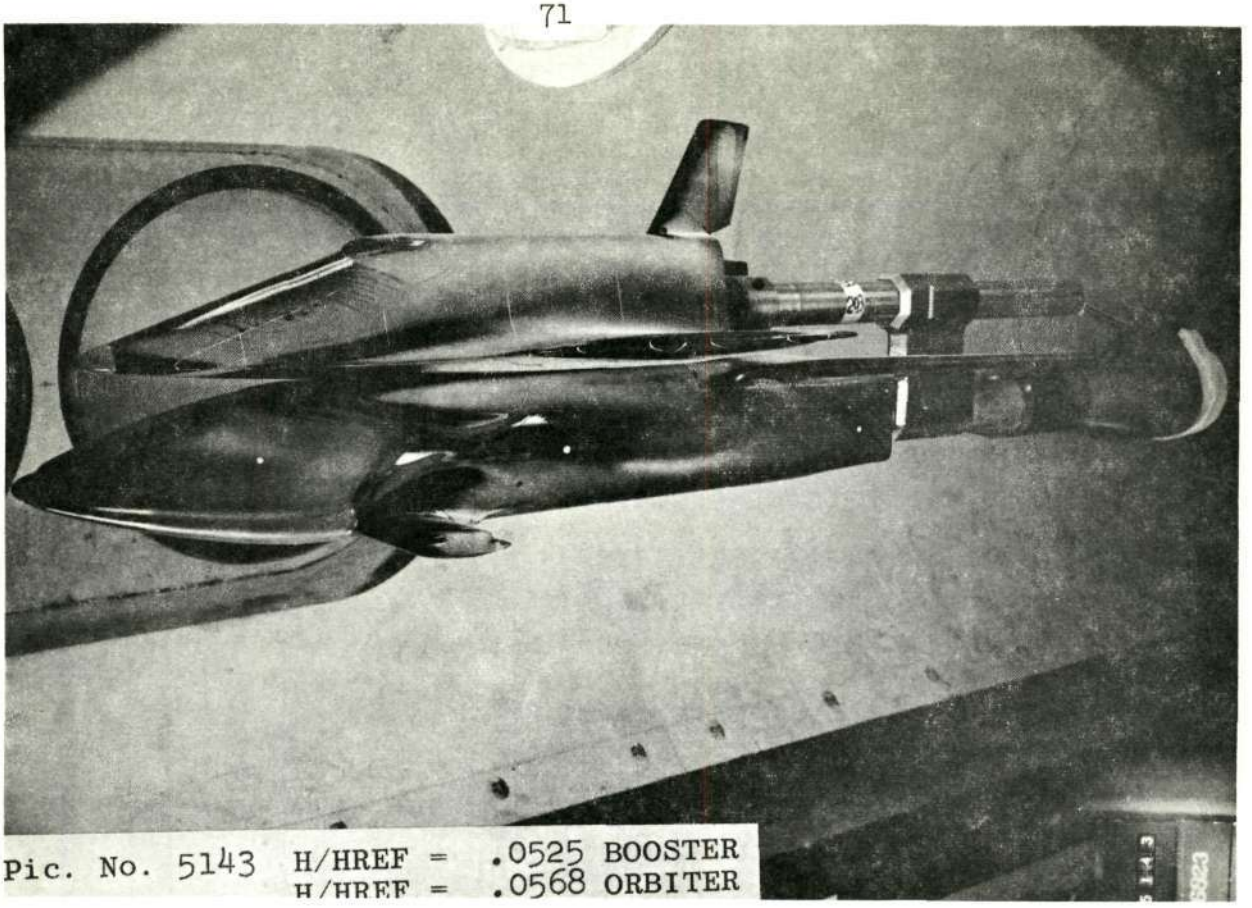
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
203	3222	WDAC-B+DWG	8.00	549.5	1329	.03	.03	0	0	0

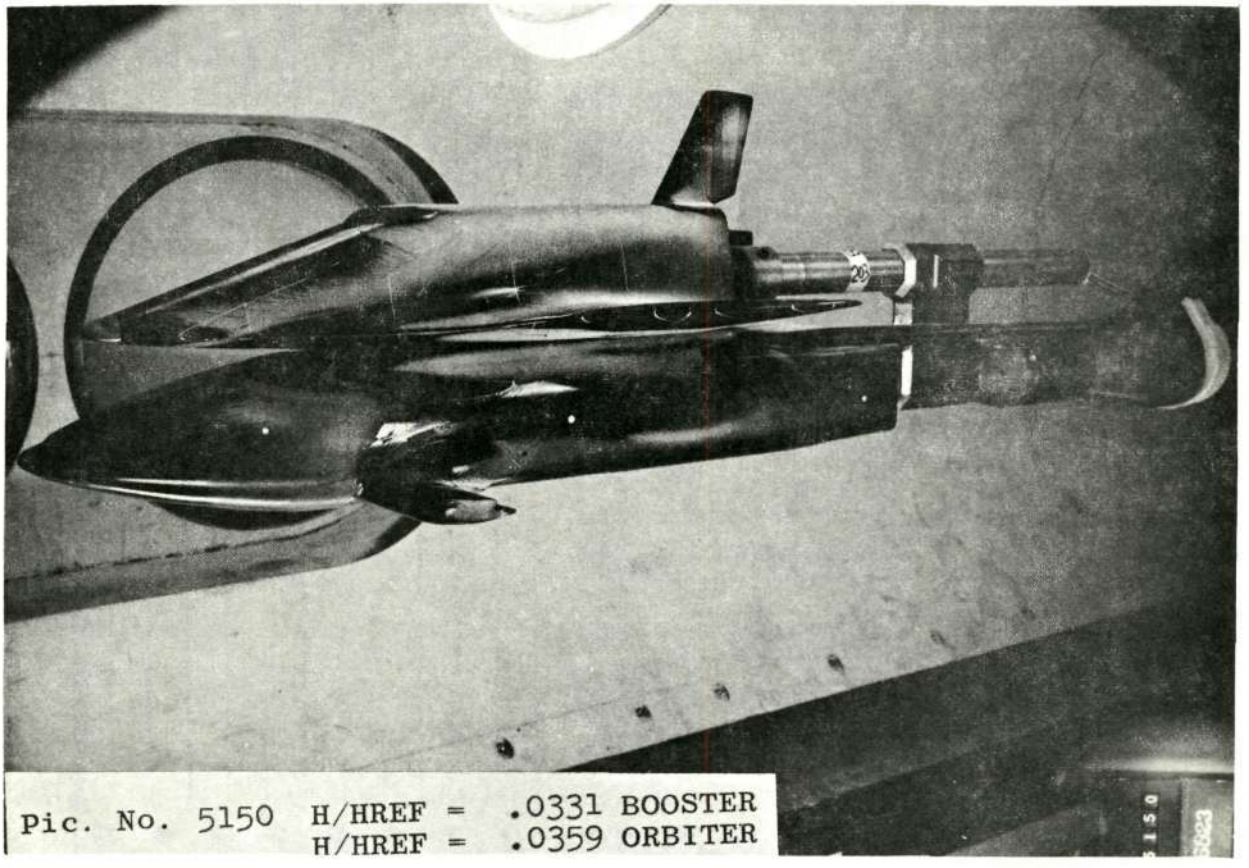
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .01)FT)	STREF (R= .01)FT)
96.3	.056	2.522	3846	4.905E-05	7.751E-08	2.43E 06	4.992E-02	3.290E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCAK)
TOP(T)	125		
SIDE(US)	500	AVERAGE TW = 84 (R)	-.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	500	AVERAGE TW = 80 (C)	

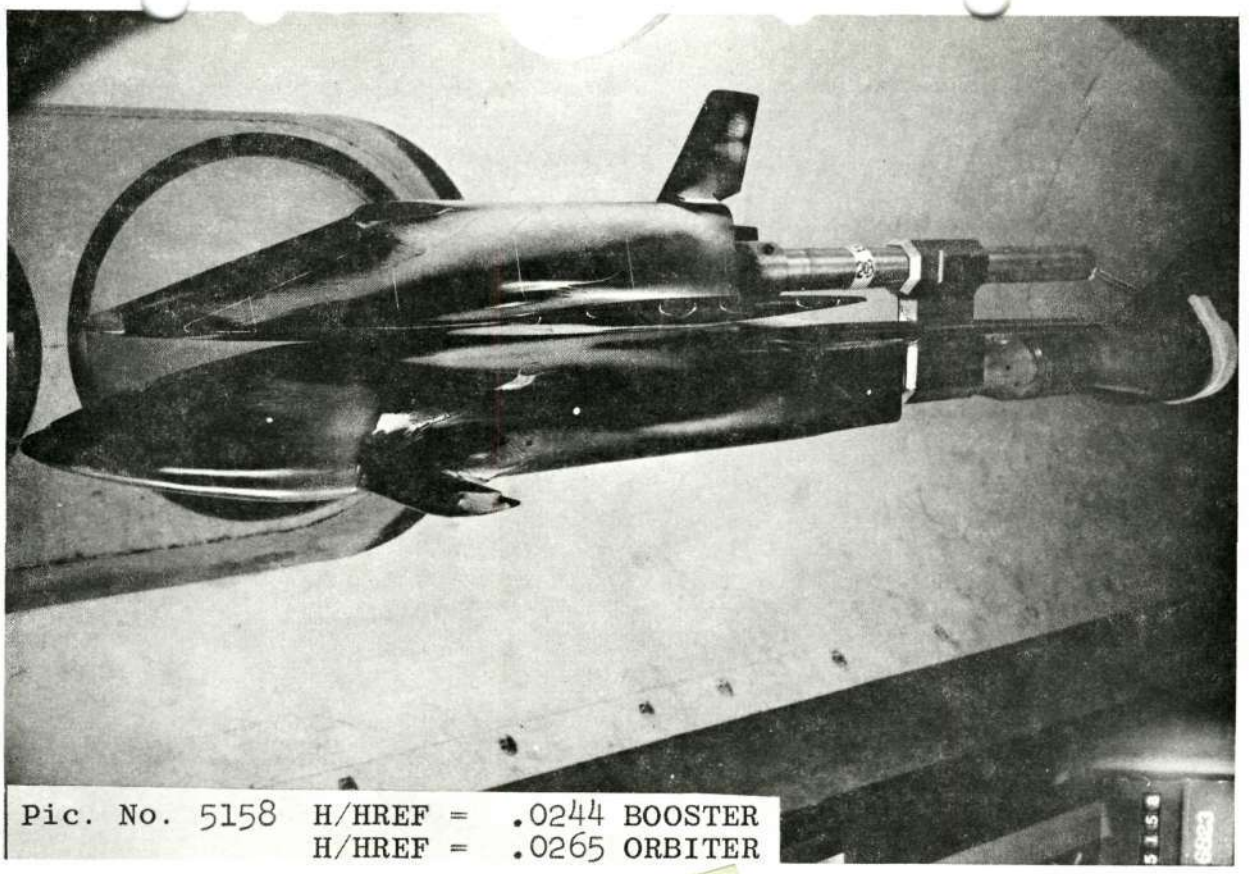
PIC NO	TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TC)/HREF	H(.85TO)	H(.85TO)/HREF	ST(TO)	MODEL TEMP F			
US 5143 (500)	4.20	3.14	0	4.66E-02	.9335	6.952E-02	1.3927	9.332E-02	1.8695	3.018E-02	86	82	84	76
US 5143 (125)	4.20	3.14	8	2.42E-03	.0525	3.182E-03	.0638	3.565E-03	.0714	1.730E-03	86	82	84	76
US 5143 (500)	4.20	3.14	8	4.63E-02	.9265	6.901E-02	1.3824	9.264E-02	1.8558	2.995E-02	86	82	84	76
US 5142 (125)	4.20	3.16	0	2.84E-03	.0568	3.444E-03	.0690	3.861E-03	.0773	1.875E-03	86	82	84	76
US 5150 (500)	7.90	6.86	0	2.94E-02	.5891	4.387E-02	.8788	5.889E-02	1.1797	1.904E-02	87	82	93	77
US 5150 (125)	7.90	6.86	8	1.45E-03	.0331	2.008E-03	.0402	2.250E-03	.0451	1.092E-03	87	82	93	77
US 515C (500)	7.90	6.86	8	2.92E-02	.5847	4.355E-02	.8723	5.846E-02	1.1710	1.890E-02	87	82	93	77
US 515C (125)	7.90	6.86	0	1.79E-03	.0359	2.174E-03	.0435	2.436E-03	.0488	1.183E-03	87	82	93	77
US 515B (500)	12.10	11.04	0	2.17E-02	.4347	3.236E-02	.6484	4.344E-02	.8705	1.405E-02	92	83	109	78
US 515B (125)	12.10	11.04	8	1.22E-03	.0244	1.481E-03	.0297	1.659E-03	.0332	8.057E-04	92	83	109	78
US 515B (500)	12.10	11.04	8	2.15E-02	.4314	3.212E-02	.6437	4.312E-02	.8641	1.395E-02	92	83	109	78
US 515B (125)	12.10	11.04	0	1.32E-03	.0265	1.603E-03	.0321	1.797E-03	.0360	8.731E-04	92	83	109	78
US 515S (500)	16.00	14.94	0	1.77E-02	.3542	2.638E-02	.5284	3.541E-02	.7094	1.145E-02	98	83	123	80
US 515S (125)	16.00	14.94	8	9.93E-04	.0199	1.208E-03	.0242	1.353E-03	.0271	6.564E-04	98	83	123	80
US 515S (500)	16.00	14.94	8	1.75E-02	.3516	2.618E-02	.5245	3.515E-02	.7041	1.136E-02	98	83	123	80
US 515S (125)	16.00	14.94	0	1.08E-03	.0216	1.307E-03	.0262	1.465E-03	.0293	7.113E-04	98	83	123	80



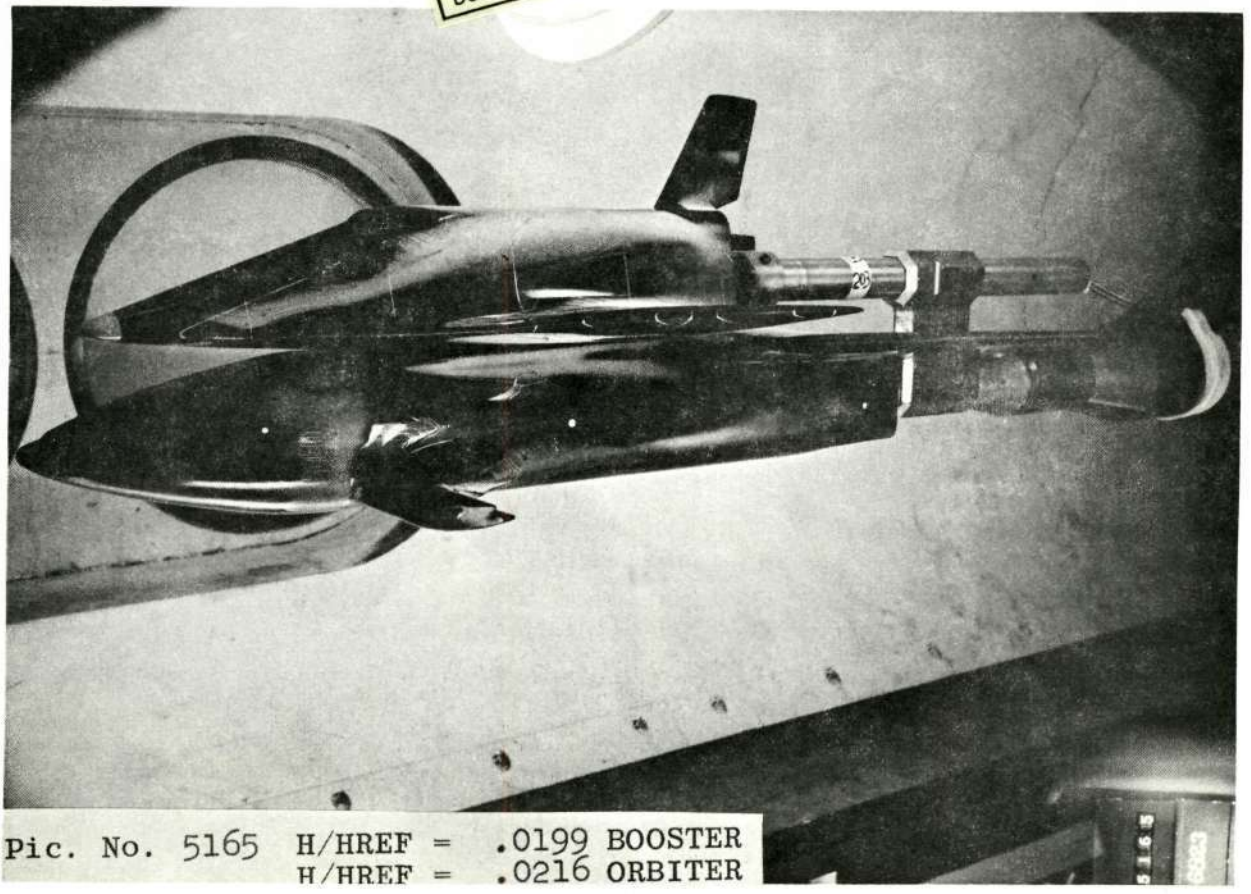
Pic. No. 5143 H/HREF = .0525 BOOSTER
H/HREF = .0568 ORBITER



Pic. No. 5150 H/HREF = .0331 BOOSTER
H/HREF = .0359 ORBITER

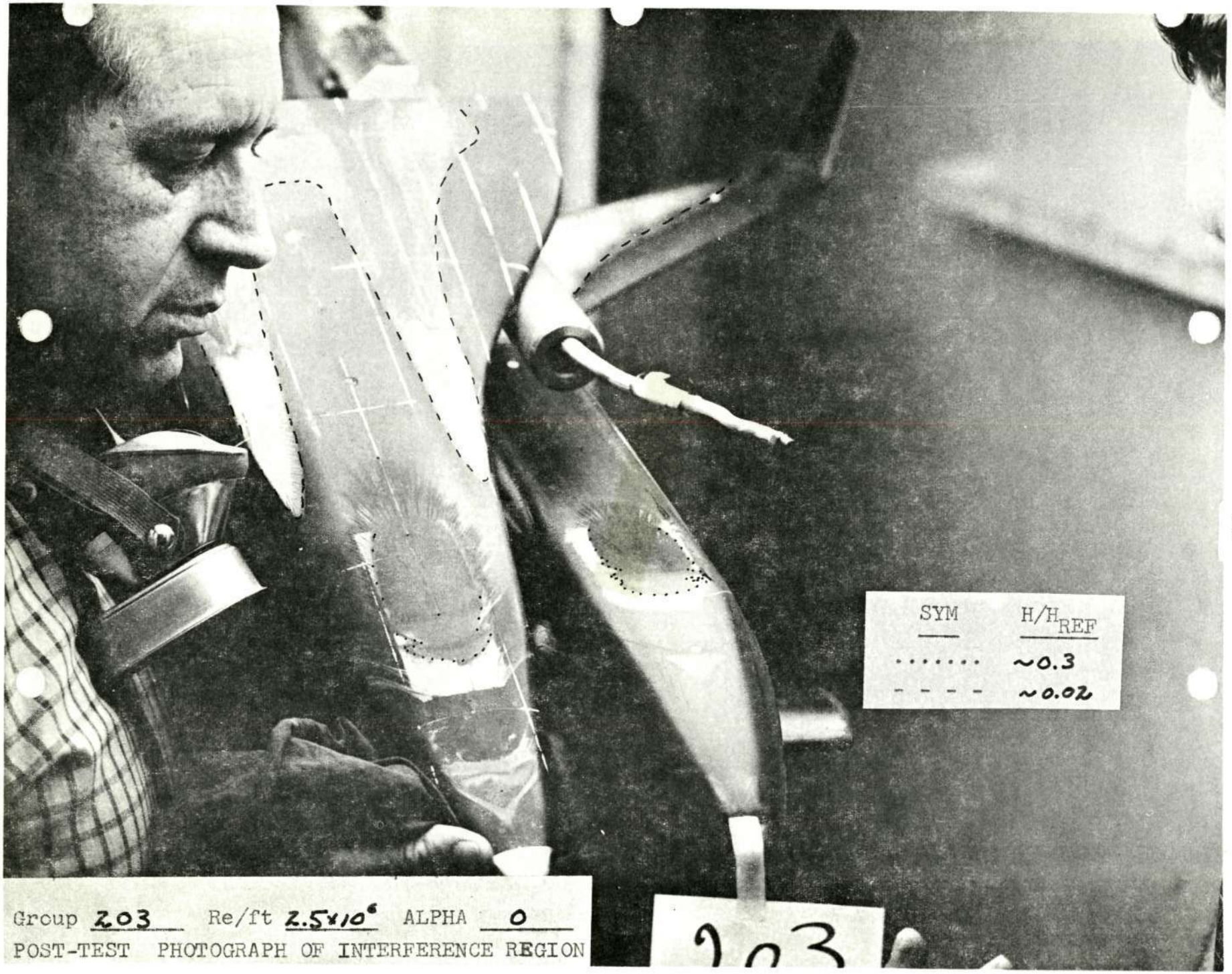


Pic. No. 5158 H/HREF = .0244 BOOSTER
H/HREF = .0265 ORBITER



Pic. No. 5165 H/HREF = .0199 BOOSTER
H/HREF = .0216 ORBITER

Group 203 Re/ft 2.43E 06 ALPHA 0



Group 203 Re/ft 2.5x10⁶ ALPHA 0

POST-TEST PHOTOGRAPH OF INTERFERENCE REGION

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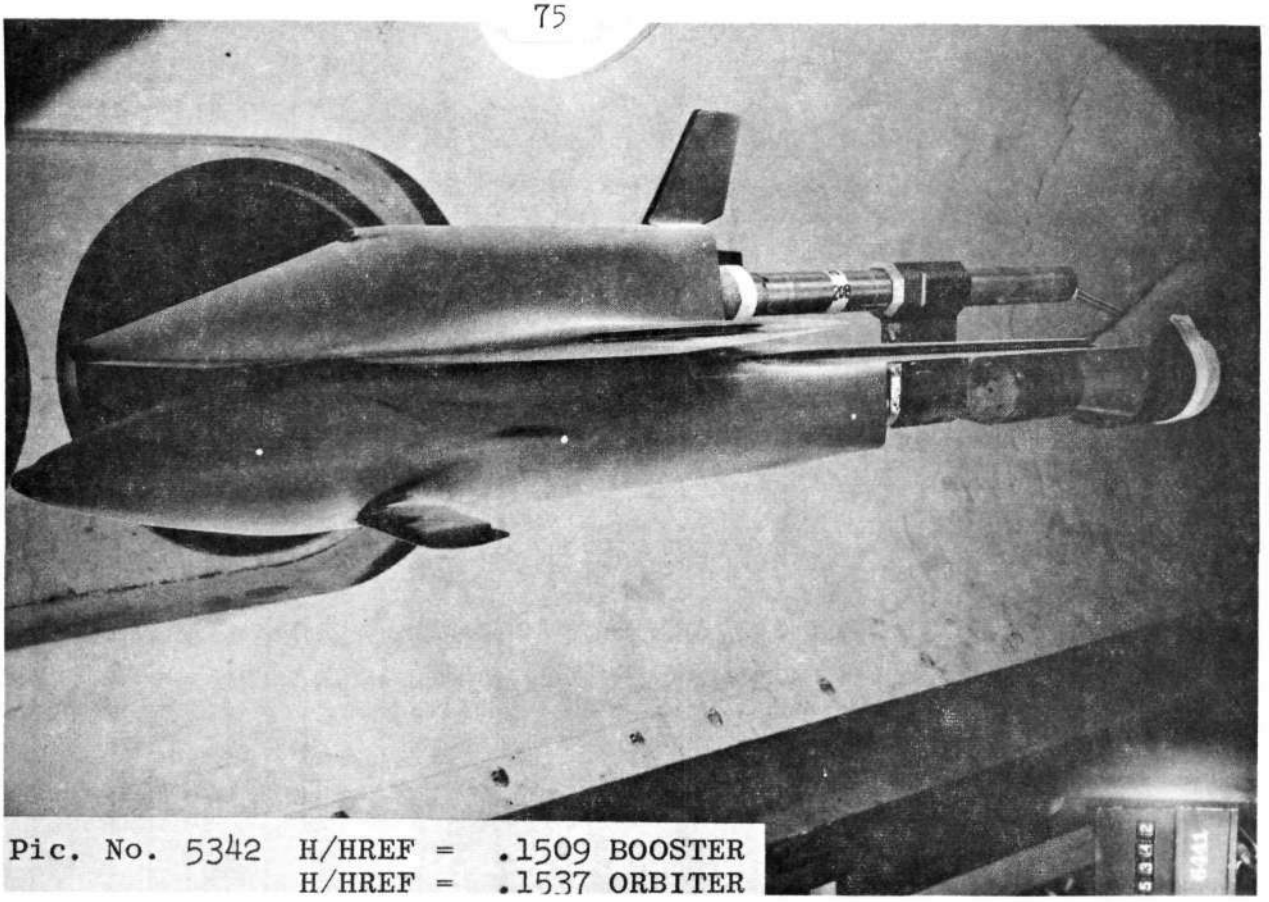
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
209	3221	PDAC-B-DWC	8.00	555.0	1327	0	0	0	0	0

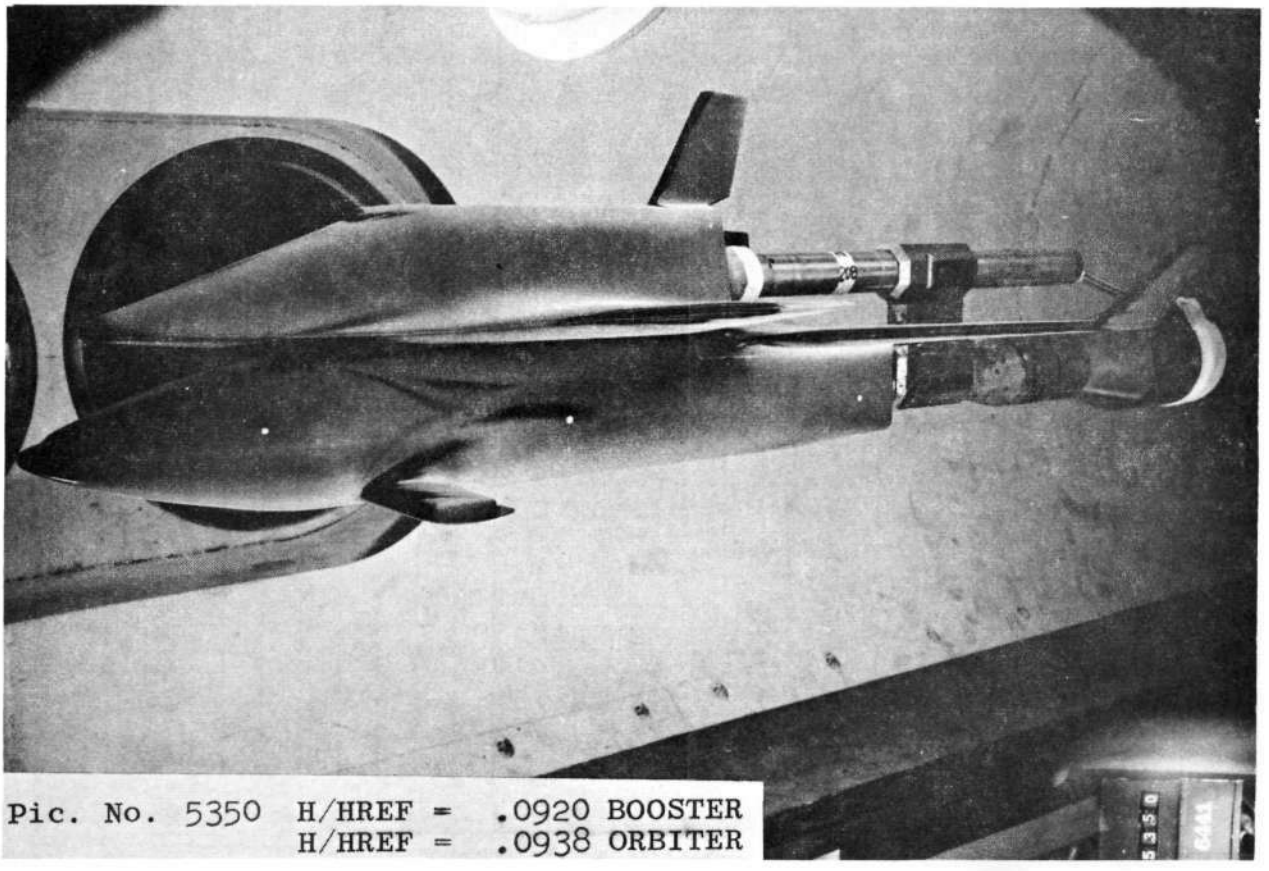
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	HREF (R= .011FT)	SIREF (R= .011FT)
96.2	.057	2.547	3845	4.959E-05	7.744E-08	2.46E 06	5.015E-02	3.272E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOACAK)
TOP(T)	200		
SIDE(US)	200	AVERAGE TW = 89 (8)	-.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	200	AVERAGE TW = 87 (0)	

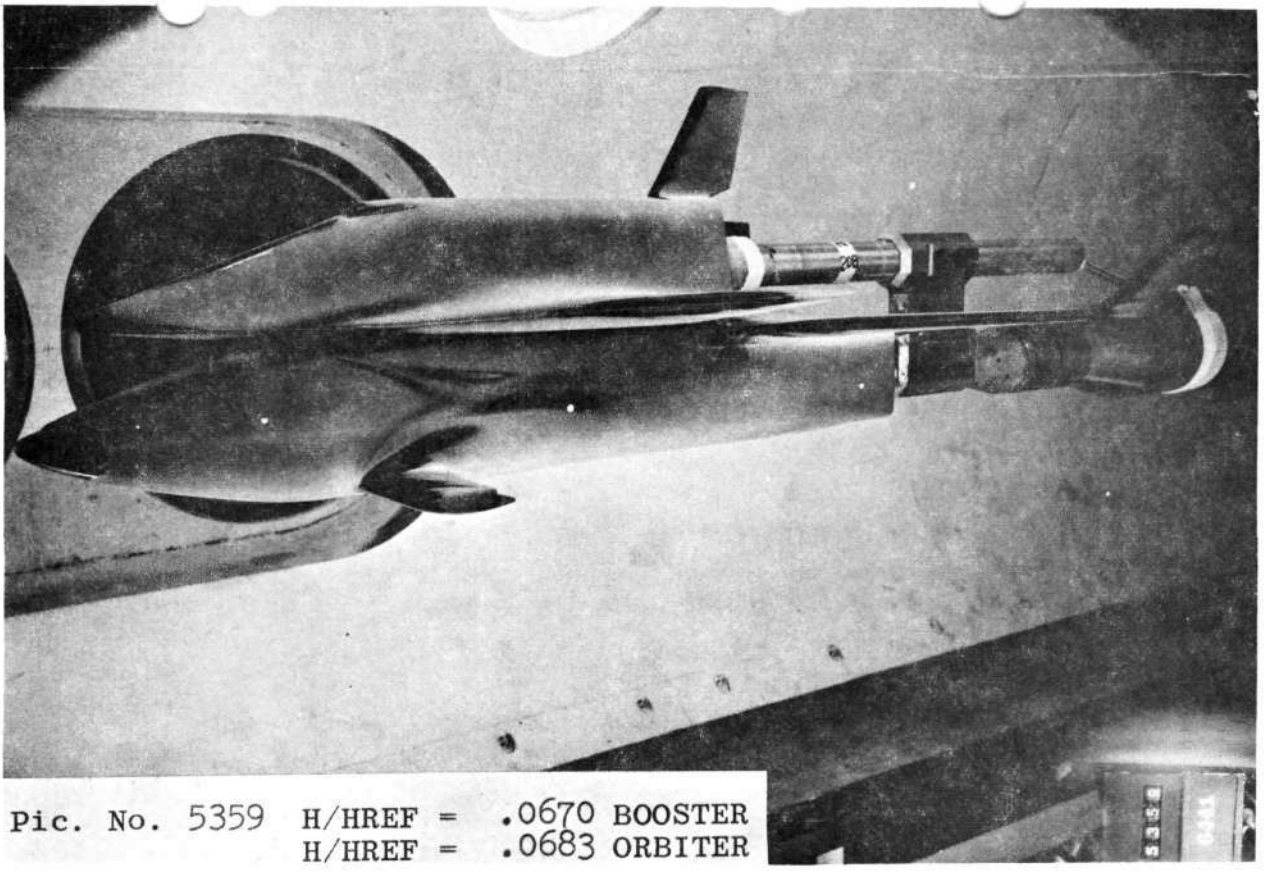
PIC NO	TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.85TO)	H(.85TO)/HREF	ST(TO)	MODEL TEMP F			
US 5342 (200)	4.30	3.26	0	7.70E-03	.1537	9.544E-03	.1904	1.084E-02	.2164	5.024E-03	91	87	0	84
US 5342 (200)	4.30	3.26	8	7.56E-03	.1509	9.369E-03	.1869	1.064E-02	.2124	4.931E-03	91	87	0	84
US 5342 (200)	4.30	3.26	8	7.56E-03	.1509	9.369E-03	.1869	1.064E-02	.2124	4.931E-03	91	87	0	84
US 5342 (200)	4.30	3.26	0	7.70E-03	.1537	9.544E-03	.1904	1.084E-02	.2164	5.024E-03	91	87	0	84
US 5350 (200)	8.50	7.46	0	4.70E-03	.0938	5.821E-03	.1162	6.613E-03	.1320	3.066E-03	94	87	0	85
US 5350 (200)	8.50	7.46	8	4.61E-03	.0920	5.714E-03	.1141	6.491E-03	.1296	3.010E-03	94	87	0	85
US 5350 (200)	8.50	7.46	8	4.61E-03	.0920	5.714E-03	.1141	6.491E-03	.1296	3.010E-03	94	87	0	85
US 5350 (200)	8.50	7.46	0	4.70E-03	.0938	5.821E-03	.1162	6.613E-03	.1320	3.066E-03	94	87	0	85
US 5356 (200)	13.25	12.21	0	3.42E-03	.0683	4.235E-03	.0846	4.812E-03	.0961	2.234E-03	101	88	0	86
US 5356 (200)	13.25	12.21	8	3.36E-03	.0670	4.157E-03	.0830	4.723E-03	.0943	2.192E-03	101	88	0	86
US 5356 (200)	13.25	12.21	8	3.36E-03	.0670	4.157E-03	.0830	4.723E-03	.0943	2.192E-03	101	88	0	86
US 5356 (200)	13.25	12.21	0	3.42E-03	.0683	4.235E-03	.0846	4.812E-03	.0961	2.234E-03	101	88	0	86
US 5366 (200)	16.90	15.86	0	2.86E-03	.0571	3.539E-03	.0707	4.021E-03	.0804	1.870E-03	107	89	0	87
US 5366 (200)	16.90	15.86	8	2.80E-03	.0560	3.474E-03	.0694	3.947E-03	.0789	1.835E-03	107	89	0	87
US 5366 (200)	16.90	15.86	8	2.80E-03	.0560	3.474E-03	.0694	3.947E-03	.0789	1.835E-03	107	89	0	87
US 5366 (200)	16.90	15.86	0	2.86E-03	.0571	3.539E-03	.0707	4.021E-03	.0804	1.870E-03	107	89	0	87



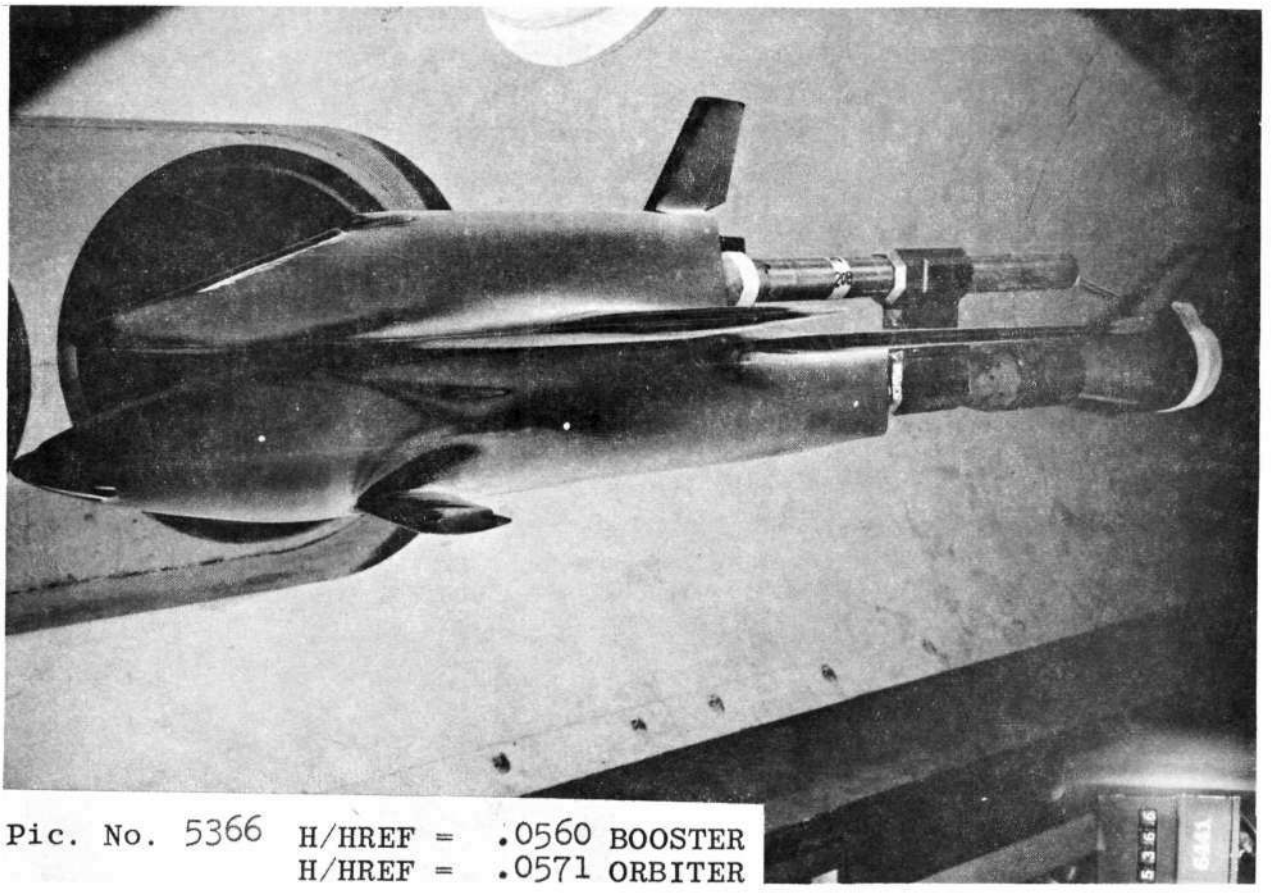
Pic. No. 5342 H/HREF = .1509 BOOSTER
H/HREF = .1537 ORBITER



Pic. No. 5350 H/HREF = .0920 BOOSTER
H/HREF = .0938 ORBITER



Pic. No. 5359 H/HREF = .0670 BOOSTER
H/HREF = .0683 ORBITER



Pic. No. 5366 H/HREF = .0560 BOOSTER
H/HREF = .0571 ORBITER

Group 208 Re/ft 2.46E 06 ALPHA 0

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AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

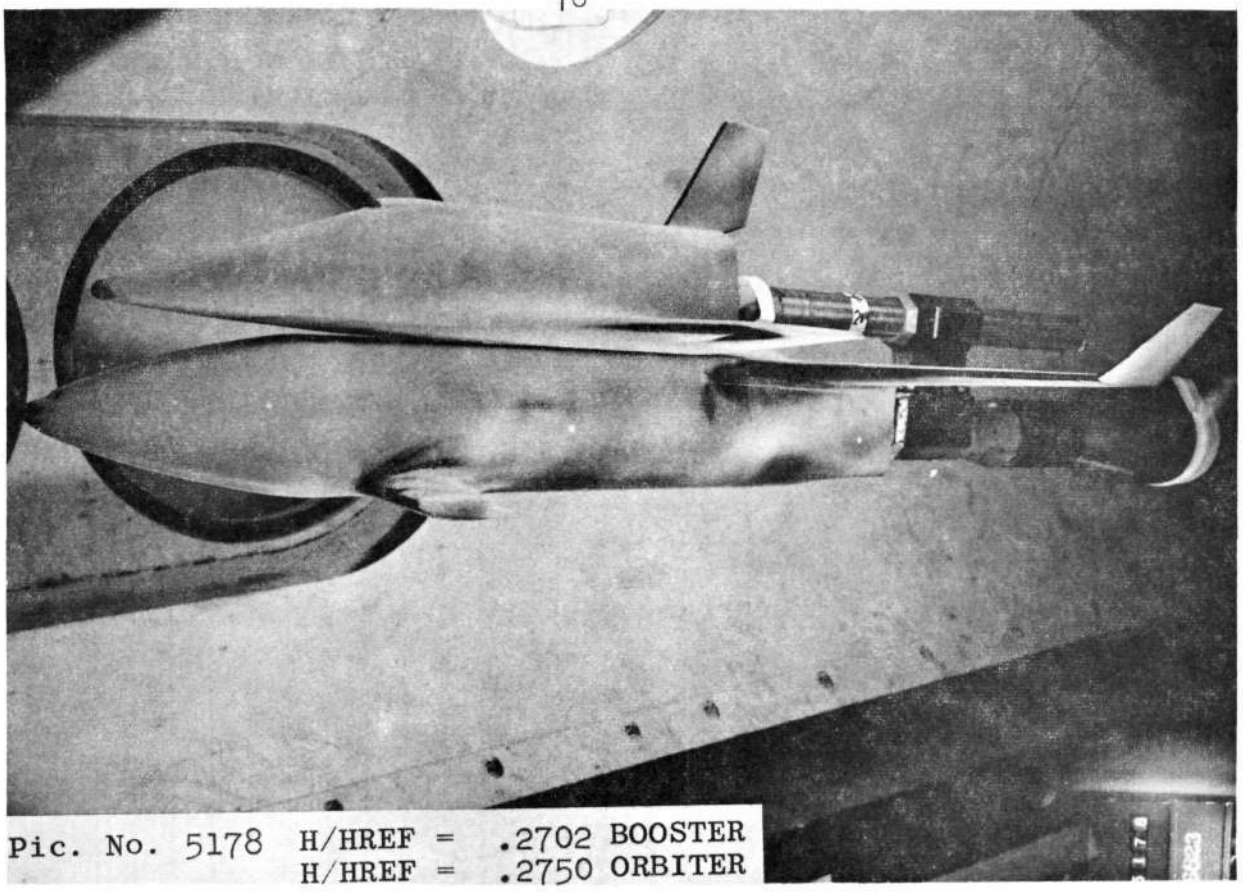
GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
204	3221	MDAC-B+DWC	8.00	549.4	1326	5.02	5.02	0	0	0

T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .01 FT)	STMEF (R= .01 FT)
96.1	.056	2.521	3843	4.912E-05	7.738E-08	2.44E 06	4.989E-02	3.287E-02

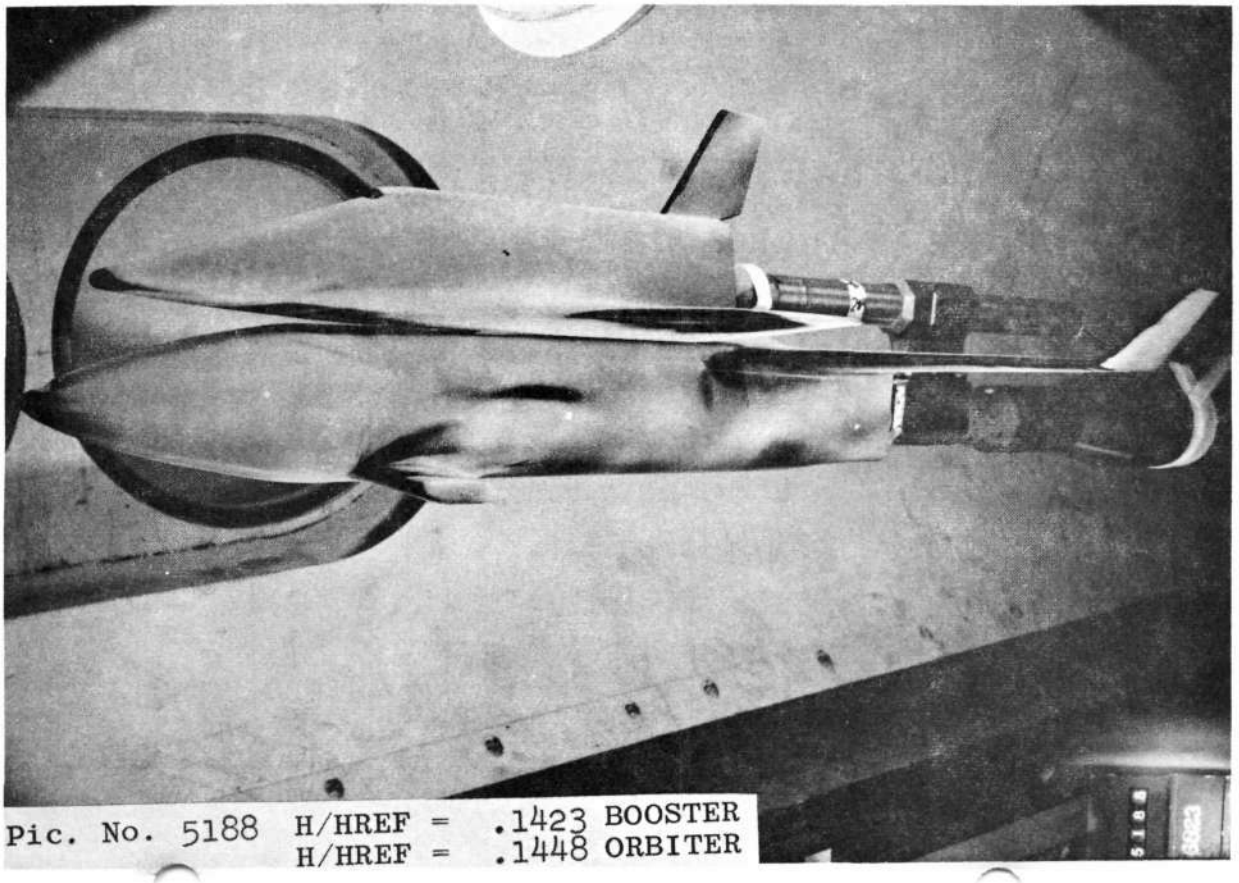
CAMERA — PAINT TEMP (DEG F) — INITIAL TEMP (DEG F) — SQUARE ROOT (RHOXCXK)

TOP(1) — 250
SIDE(US) — 500 — AVERAGE Tw = 87 (8) — -.008(SQUARE ROOT DEL TIME) + 8.11
SIDE(LS) — 500 — AVERAGE Tw = 84 (0)

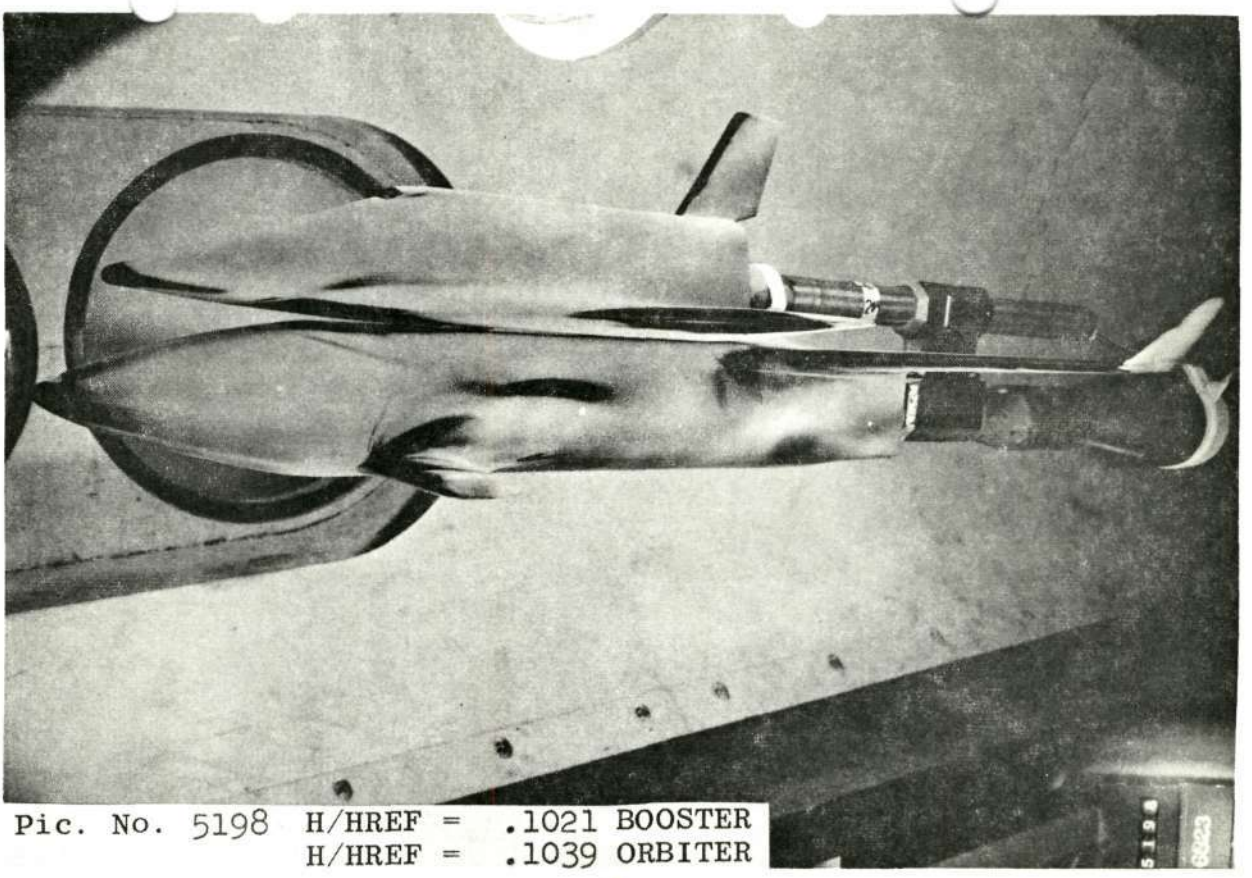
PIC NO	TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.8STO)	H(.8STO)/HREF	ST(TO)	MODEL	TEMP F		
US 517P (500)	3.65	2.58	0	5.21E-02	1.0451	7.795E-02	1.5625	1.049E-01	2.1023	3.375E-02	90	84	86	82
US 517P (250)	3.65	2.58	8	1.35E-02	.2702	1.698E-02	.3404	1.952E-02	.3913	8.844E-03	90	84	86	82
US 517P (500)	3.65	2.58	8	5.18E-02	1.0383	7.745E-02	1.5525	1.042E-01	2.0888	3.353E-02	90	84	86	82
US 517P (250)	3.65	2.58	0	1.37E-02	.2750	1.728E-02	.3463	1.986E-02	.3981	9.000E-03	90	84	86	82
US 518P (500)	8.70	7.63	0	2.74E-02	.5502	4.103E-02	.8226	5.521E-02	1.1068	1.777E-02	93	84	103	82
US 518P (250)	8.70	7.63	8	7.10E-03	.1423	8.939E-03	.1792	1.02RE-02	.2060	4.657E-03	93	84	103	82
US 518P (500)	8.70	7.63	8	2.73E-02	.5466	4.077E-02	.8174	5.486E-02	1.0997	1.765E-02	93	84	103	82
US 518P (250)	8.70	7.63	0	7.22E-03	.1448	9.094E-03	.1823	1.045E-02	.2096	4.739E-03	93	84	103	82
US 519P (500)	13.80	12.73	0	1.97E-02	.3947	2.944E-02	.5902	3.961E-02	.7941	1.275E-02	102	85	125	82
US 519P (250)	13.80	12.73	8	5.29E-03	.1021	6.414E-03	.1286	7.372E-03	.1478	3.341E-03	102	85	125	82
US 519P (500)	13.80	12.73	8	1.96E-02	.3922	2.925E-02	.5864	3.936E-02	.7890	1.266E-02	102	85	125	82
US 519P (250)	13.80	12.73	0	5.18E-03	.1039	6.525E-03	.1308	7.500E-03	.1504	3.400E-03	102	85	125	82
US 520P (500)	18.90	17.83	0	1.56E-02	.3121	2.328E-02	.4667	3.132E-02	.6279	1.008E-02	110	86	145	83
US 520P (250)	18.90	17.83	8	4.03E-03	.0807	5.071E-03	.1017	5.829E-03	.1169	2.642E-03	110	86	145	83
US 520P (500)	18.90	17.83	8	1.55E-02	.3101	2.313E-02	.4637	3.112E-02	.6239	1.002E-02	110	86	145	83
US 520P (250)	18.90	17.83	0	4.10E-03	.0821	5.159E-03	.1034	5.930E-03	.1189	2.689E-03	110	86	145	83



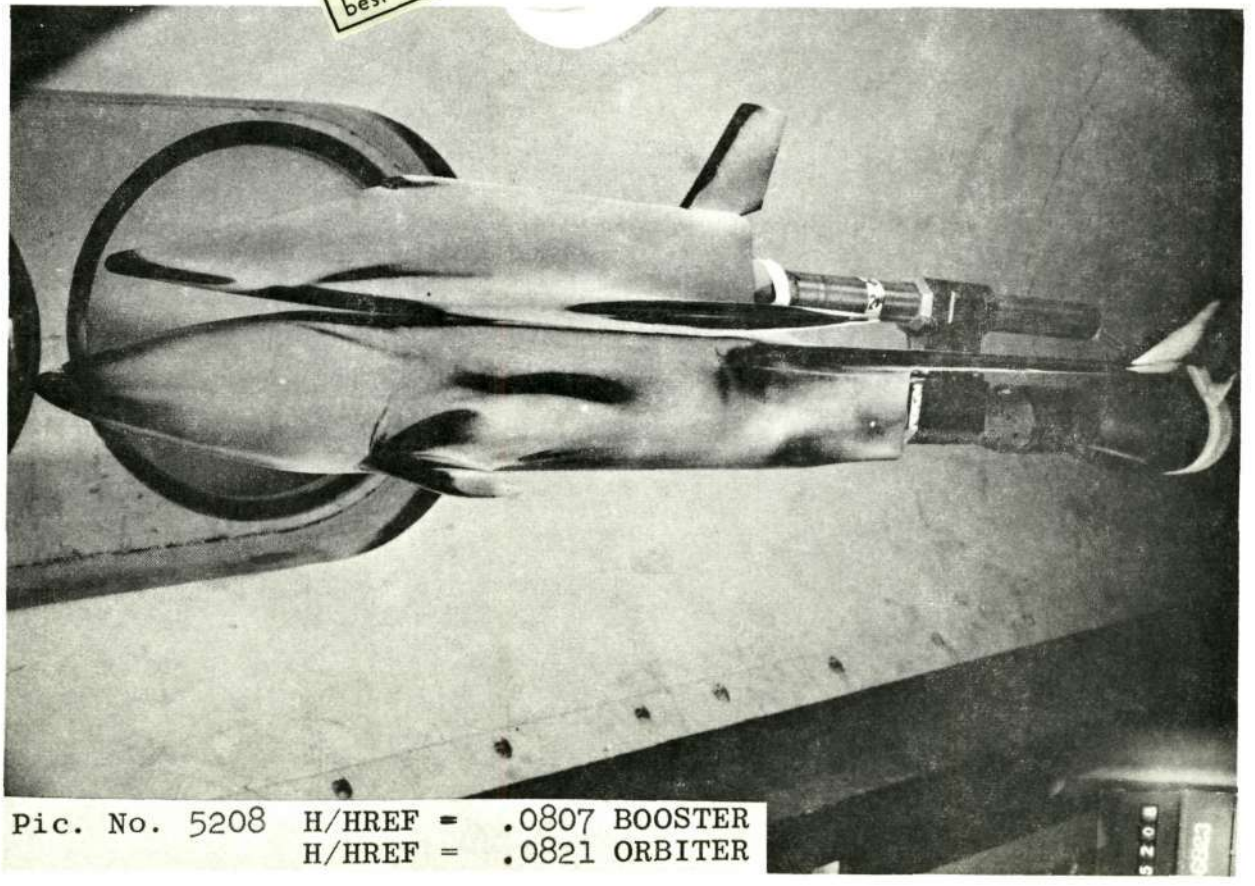
Pic. No. 5178 H/HREF = .2702 BOOSTER
H/HREF = .2750 ORBITER



Pic. No. 5188 H/HREF = .1423 BOOSTER
H/HREF = .1448 ORBITER



Pic. No. 5198 H/HREF = .1021 BOOSTER
H/HREF = .1039 ORBITER



Pic. No. 5208 H/HREF = .0807 BOOSTER
H/HREF = .0821 ORBITER

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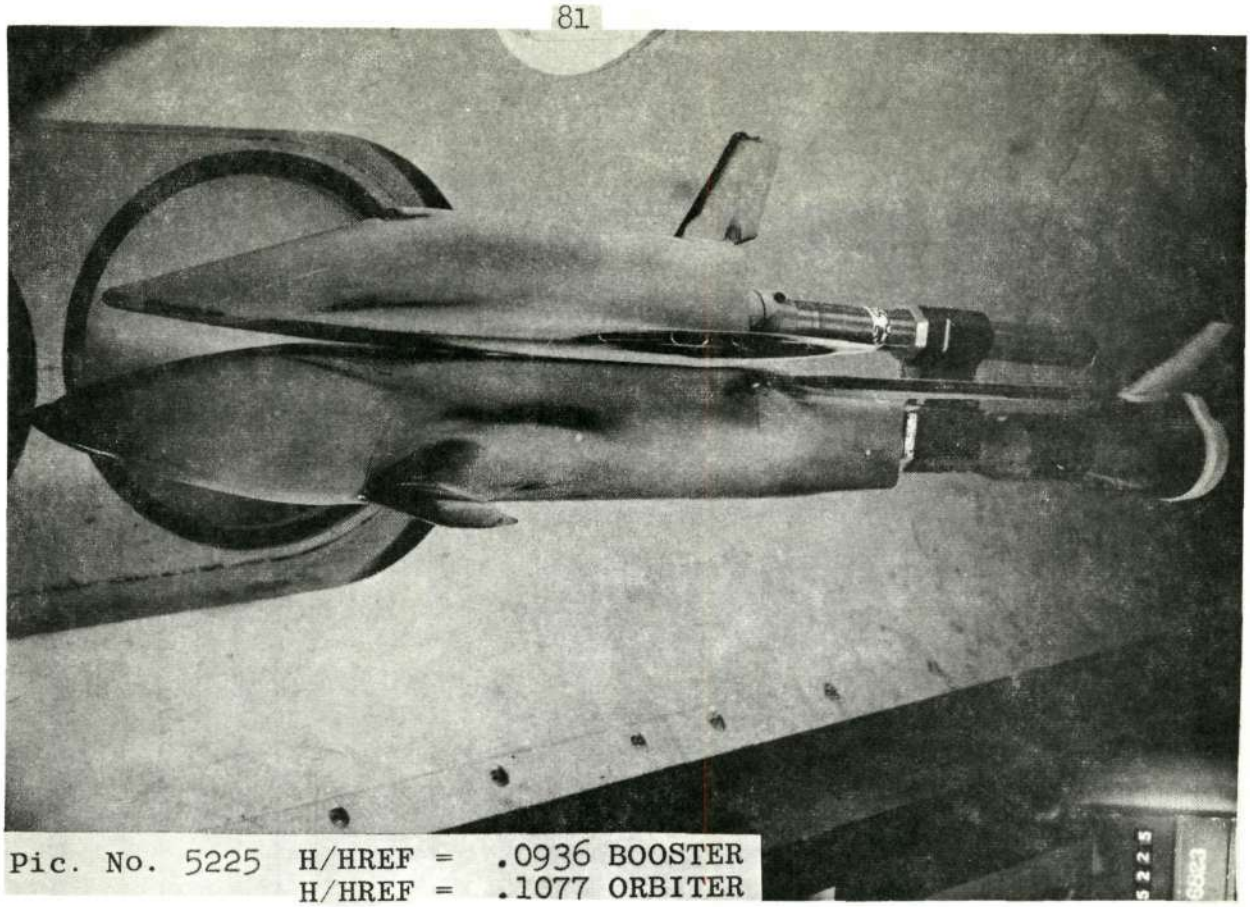
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
205	1222	MDAC-B-DWO	8.00	553.2	1320	5.04	5.04	0	0	0

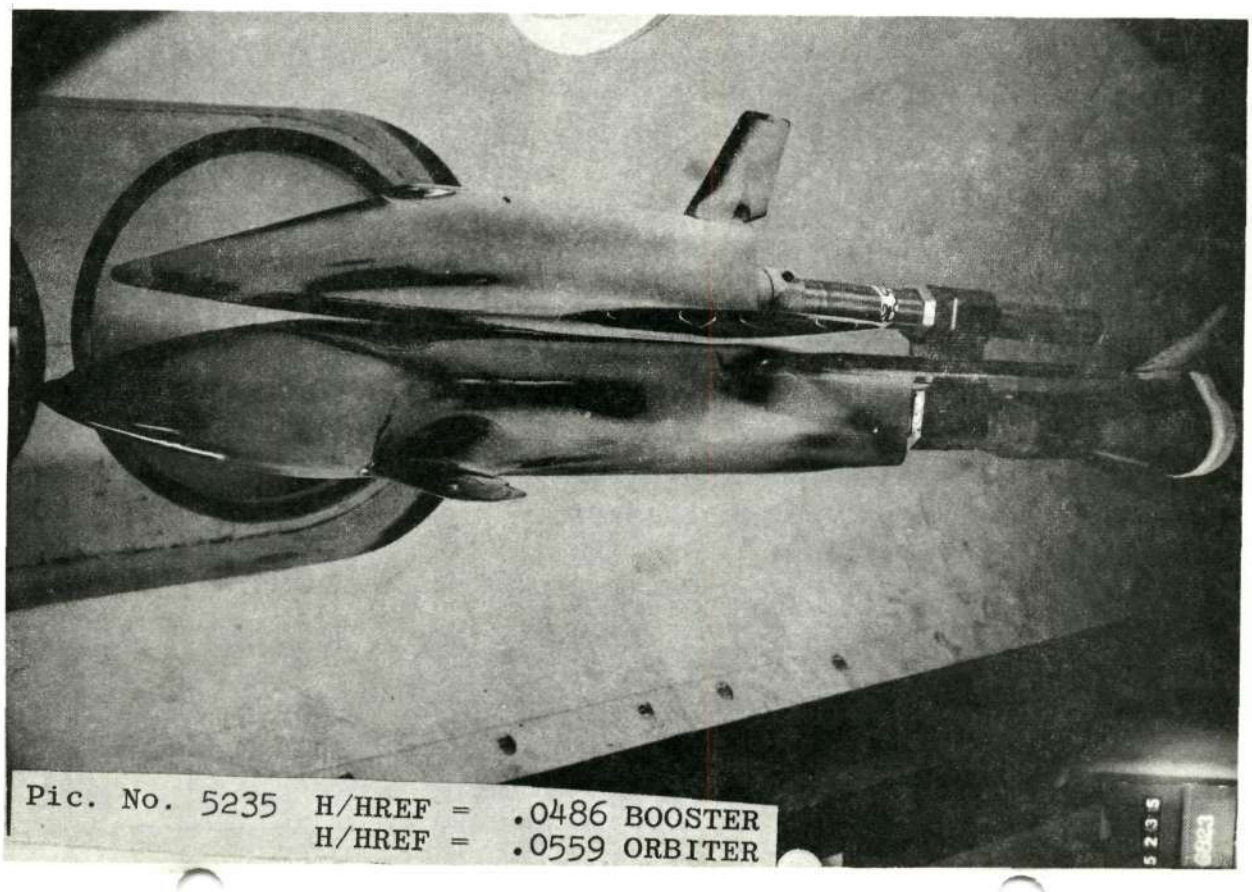
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	HREF (R= .01IFT)	STNEF (R= .01IFT)
95.7	.057	2.538	3834	4.968E-05	7.703E-08	2.47E 06	5.002E-02	3.267E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXK)
TOP(T)	150		
SIDE(US)	150	AVERAGE TW = 88 (P)	=.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	150	AVERAGE TW = 78 (O)	

PIC NO	TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.85TO)	H(.85TO)/HREF	ST(TO)	MODEL	TEMP F		
US 5225 (150)	3.55	2.51	O	5.39E-03	.1077	6.587E-03	.1317	7.413E-03	.1482	3.521E-03	91	84	0	78
US 5225 (150)	3.55	2.51	B	4.68E-03	.0936	5.726E-03	.1145	6.450E-03	.1290	3.062E-03	91	84	0	78
US 5225 (150)	3.55	2.51	B	4.68E-03	.0936	5.726E-03	.1145	6.450E-03	.1290	3.062E-03	91	84	0	78
US 5225 (150)	3.55	2.51	O	5.39E-03	.1077	6.587E-03	.1317	7.413E-03	.1482	3.521E-03	91	84	0	78
US 5235 (150)	8.65	7.61	O	2.79E-03	.0559	3.419E-03	.0683	3.847E-03	.0769	1.828E-03	95	85	0	79
US 5235 (150)	8.65	7.61	B	2.43E-03	.0486	2.972E-03	.0594	3.347E-03	.0669	1.589E-03	95	85	0	79
US 5235 (150)	8.65	7.61	B	2.43E-03	.0486	2.972E-03	.0596	3.347E-03	.0669	1.589E-03	95	85	0	79
US 5235 (150)	8.65	7.61	O	2.79E-03	.0559	3.419E-03	.0683	3.847E-03	.0769	1.828E-03	95	85	0	79
US 5245 (150)	13.75	12.71	O	2.00E-03	.0401	2.451E-03	.0490	2.758E-03	.0551	1.310E-03	101	86	0	80
US 5245 (150)	13.75	12.71	B	1.74E-03	.0348	2.131E-03	.0426	2.400E-03	.0480	1.139E-03	101	86	0	80
US 5245 (150)	13.75	12.71	B	1.74E-03	.0348	2.131E-03	.0426	2.400E-03	.0480	1.139E-03	101	86	0	80
US 5245 (150)	13.75	12.71	O	2.00E-03	.0401	2.451E-03	.0490	2.758E-03	.0551	1.310E-03	101	86	0	80
US 5255 (150)	18.85	17.81	O	1.58E-03	.0317	1.938E-03	.0387	2.180E-03	.0436	1.036E-03	110	87	0	81
US 5255 (150)	18.85	17.81	B	1.38E-03	.0275	1.684E-03	.0337	1.897E-03	.0379	9.004E-04	110	87	0	81
US 5255 (150)	18.85	17.81	B	1.38E-03	.0275	1.684E-03	.0337	1.897E-03	.0379	9.004E-04	110	87	0	81
US 5255 (150)	18.85	17.81	O	1.58E-03	.0317	1.938E-03	.0387	2.180E-03	.0436	1.036E-03	110	87	0	81



Pic. No. 5225 H/HREF = .0936 BOOSTER
H/HREF = .1077 ORBITER



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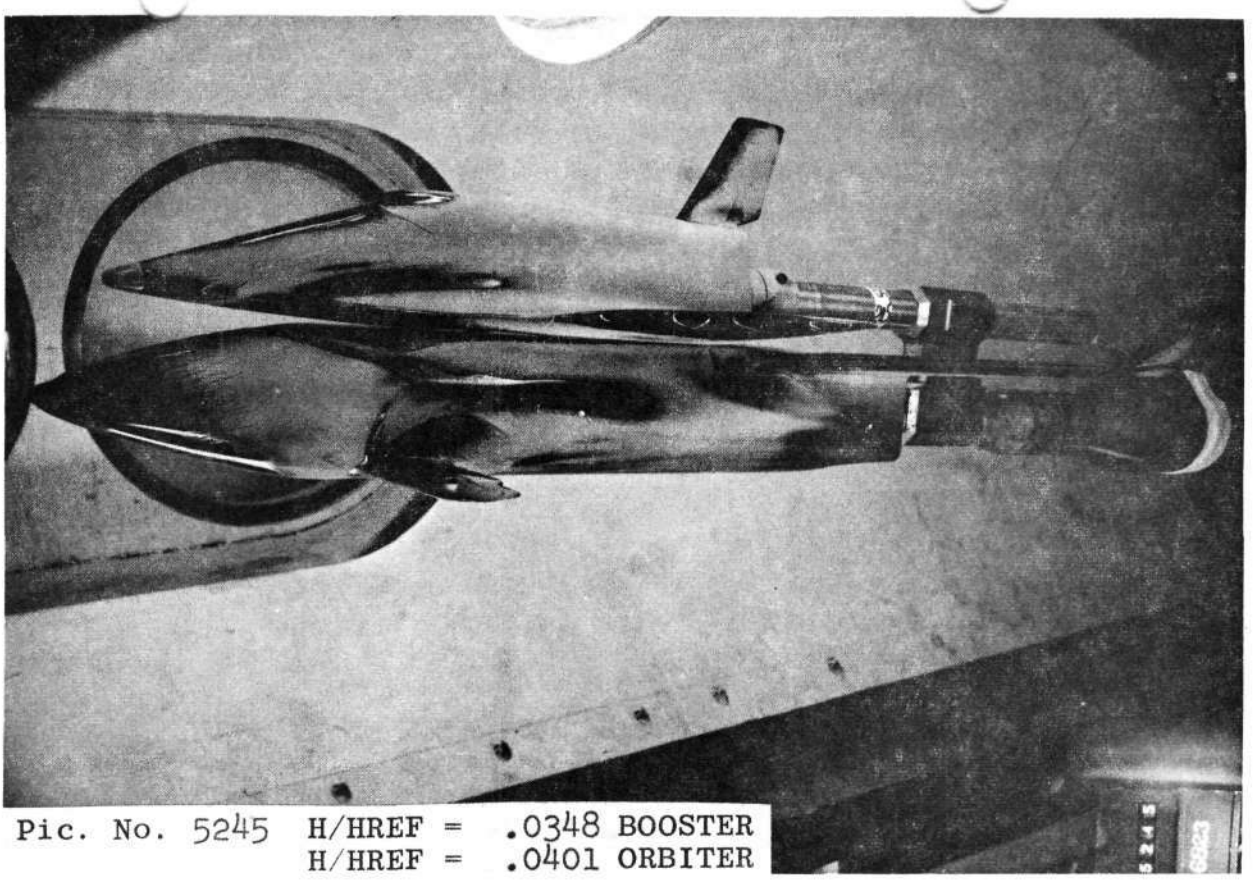
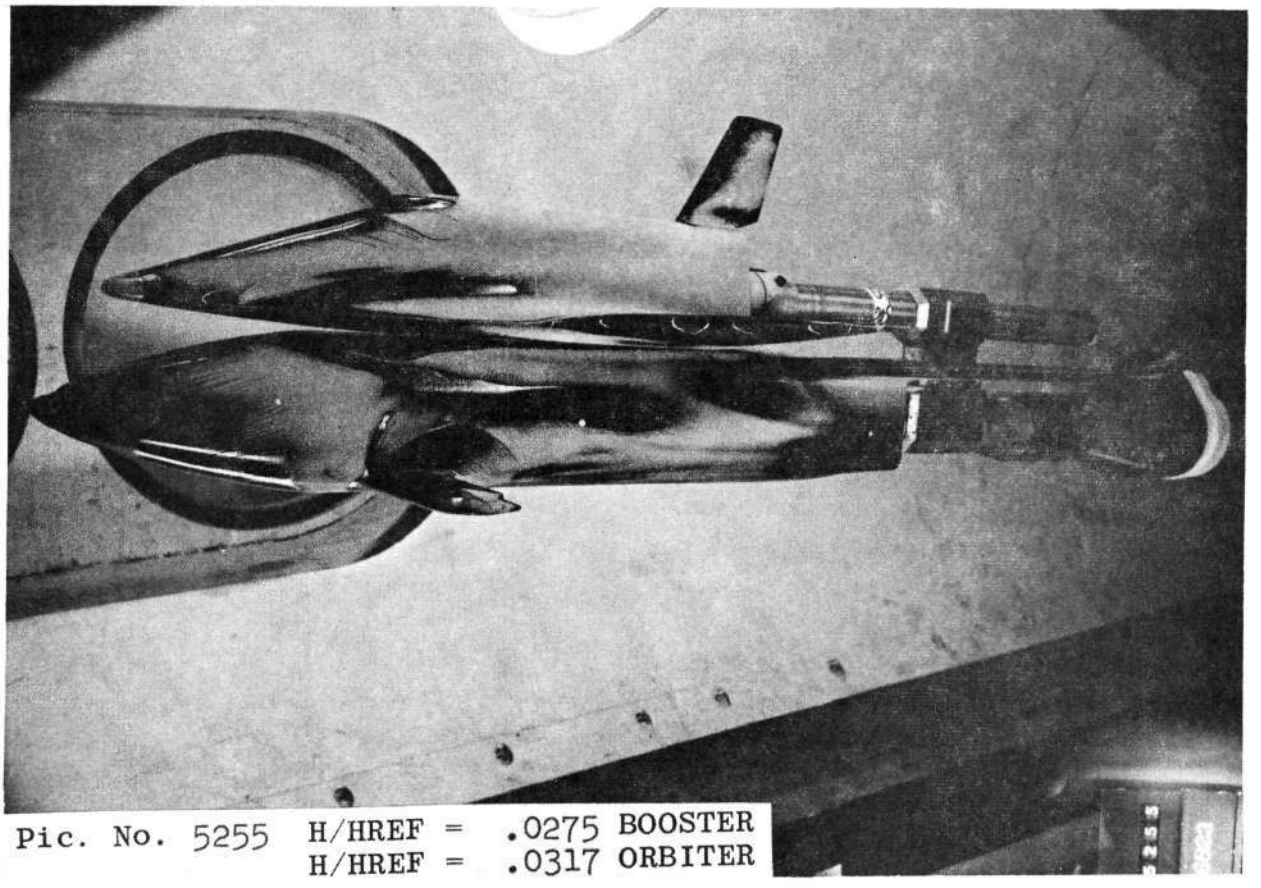
H/HREF = .0559 ORBITER



Pic. No. 5245 H/HREF = .0348 BOOSTER
H/HREF = .0401 ORBITER



Pic. No. 5255 H/HREF = .0275 BOOSTER
H/HREF = .0317 ORBITER

Group 205 Re/ft 2.47E 06 ALPHA 5

6/ 3/71

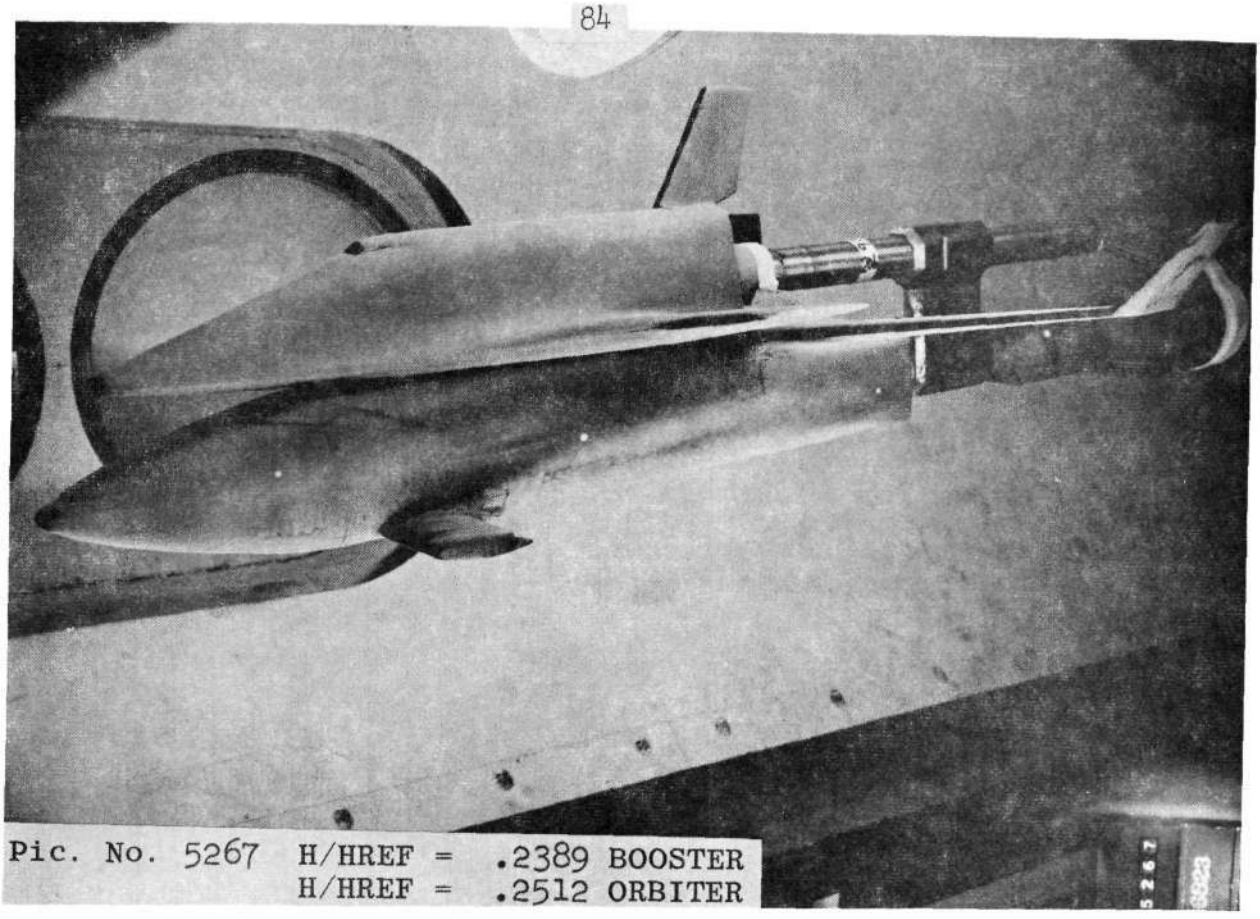
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
206	3221	PDAC-B-DWO	8.00	548.9	1326	-4.98	-4.98	0	0	0

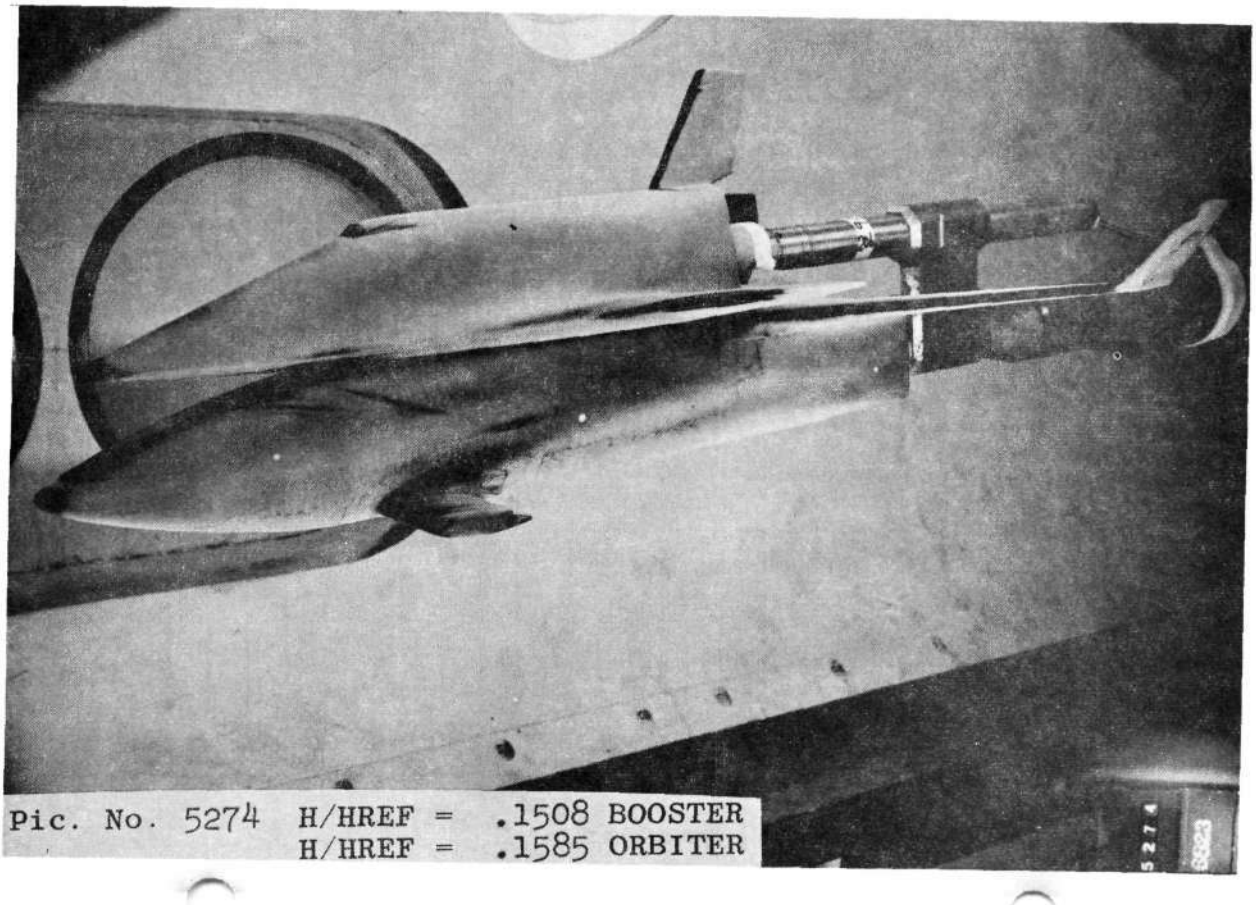
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .01 FT)	SREF (R= .01 FT)
96.1	.056	2.519	3842	4.911E-05	7.734E-08	2.44E 06	4.987E-02	3.287E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXK)
TOP(T)	250		
SIDE(US)	500	AVERAGE TW = 89 (R)	-.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	500	AVERAGE TW = 80 (O)	

PIC NC	TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.9TO)/HREF	H(.85TO)	H(.85TO)/HREF	ST(TO)	MODEL	TEMP F		
US 5267 (500)	4.20	3.14	0	4.70E-02	.9418	7.026E-02	1.4089	9.462E-02	1.8972	3.041E-02	91	86	0	79
US 5267 (250)	4.20	3.14	8	1.19E-02	.2389	1.501E-02	.3009	1.726E-02	.3460	7.818E-03	91	86	0	79
US 5267 (500)	4.20	3.16	8	4.61E-02	.9241	6.896E-02	1.3828	9.287E-02	1.8621	2.984E-02	91	86	0	79
US 5267 (250)	4.20	3.16	0	1.25E-02	.2512	1.578E-02	.3163	1.813E-02	.3636	8.220E-03	91	86	0	79
US 5274 (500)	7.90	6.86	0	2.96E-02	.5944	4.434E-02	.8892	5.971E-02	1.1974	1.920E-02	93	86	0	79
US 5274 (250)	7.90	6.86	8	7.52E-03	.1508	9.472E-03	.1899	1.089E-02	.2184	4.936E-03	93	86	0	79
US 5274 (500)	7.90	6.86	8	2.91E-02	.5833	4.352E-02	.8728	5.861E-02	1.1753	1.884E-02	93	86	0	79
US 5274 (250)	7.90	6.86	0	7.91E-03	.1585	9.956E-03	.1997	1.144E-02	.2295	5.190E-03	93	86	0	79
US 5282 (500)	12.10	11.06	0	2.19E-02	.4384	3.271E-02	.6558	4.404E-02	.8831	1.416E-02	96	87	0	79
US 5282 (250)	12.10	11.06	8	5.55E-03	.1112	6.987E-03	.1401	8.032E-03	.1611	3.640E-03	96	87	0	79
US 5282 (500)	12.10	11.06	8	2.15E-02	.4302	3.210E-02	.6437	4.323E-02	.8668	1.389E-02	96	87	0	79
US 5282 (250)	12.10	11.06	0	5.83E-03	.1169	7.344E-03	.1473	8.441E-03	.1693	3.828E-03	96	87	0	79
US 5290 (500)	16.30	15.26	0	1.76E-02	.3525	2.629E-02	.5273	3.541E-02	.7101	1.139E-02	101	89	0	79
US 5290 (250)	16.30	15.26	8	4.46E-03	.0894	5.617E-03	.1126	6.457E-03	.1295	2.928E-03	101	89	0	79
US 5290 (500)	16.30	15.26	8	1.72E-02	.3459	2.581E-02	.5176	3.475E-02	.6969	1.118E-02	101	89	0	79
US 5290 (250)	16.30	15.26	0	4.69E-03	.0940	5.904E-03	.1184	6.786E-03	.1361	3.079E-03	101	89	0	79



Pic. No. 5267 H/HREF = .2389 BOOSTER
H/HREF = .2512 ORBITER



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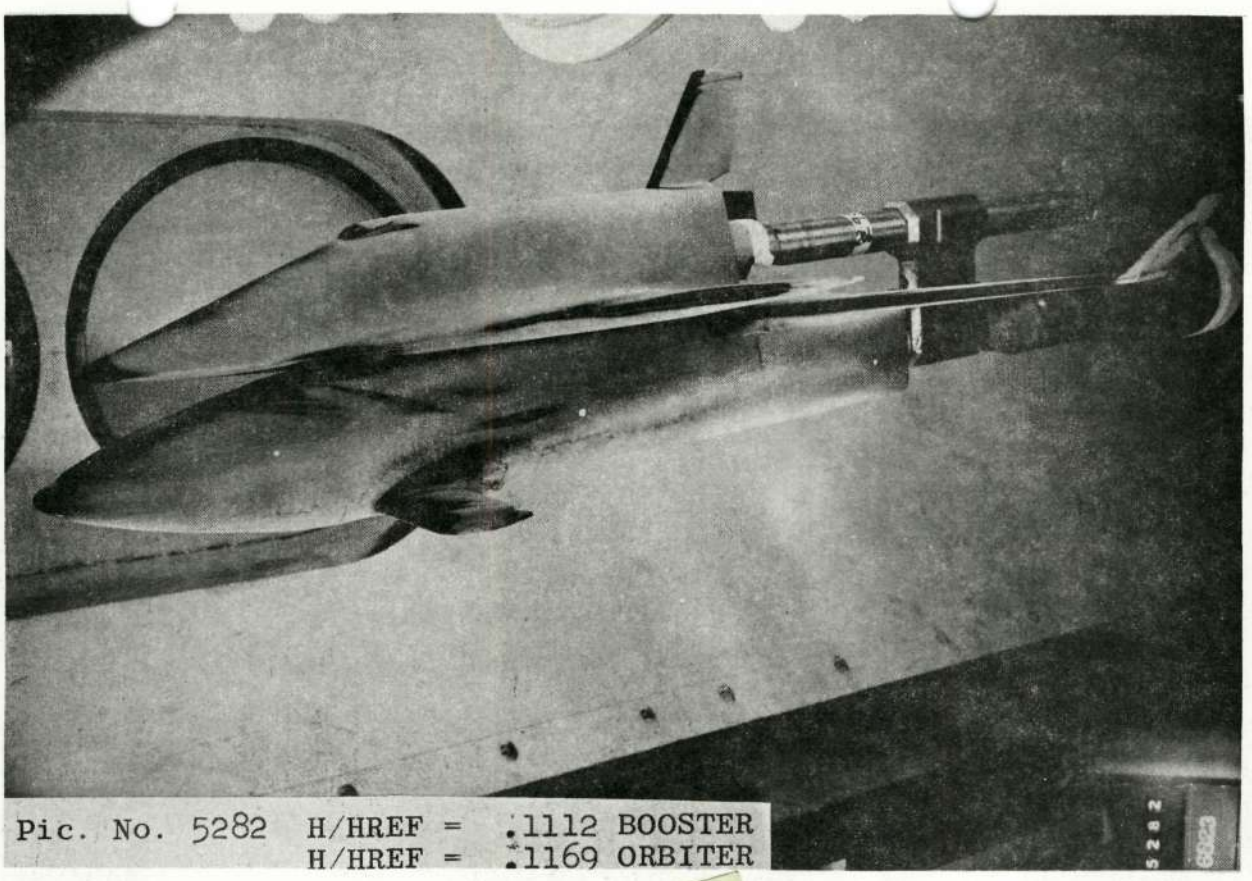

Pic. No. 5282 H/HREF = .1112 BOOSTER
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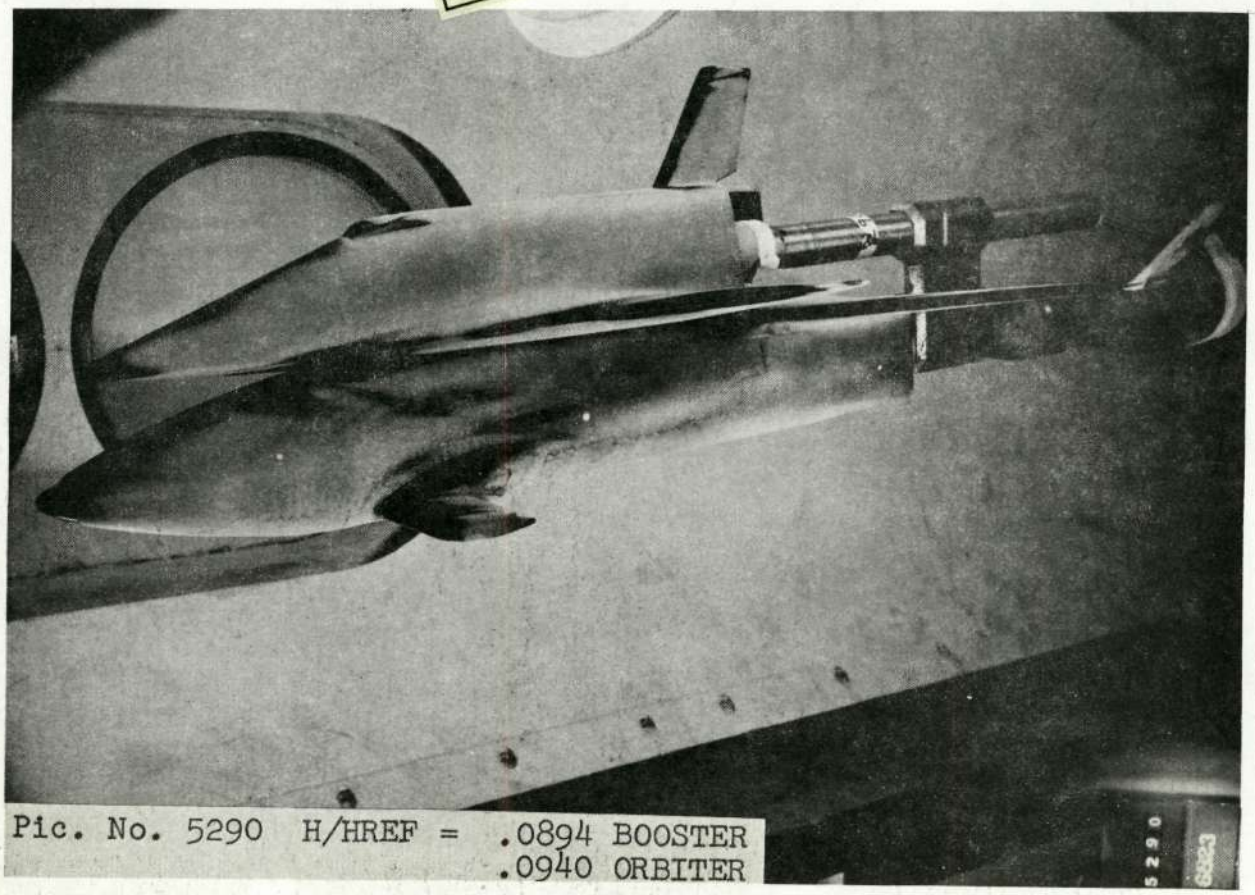
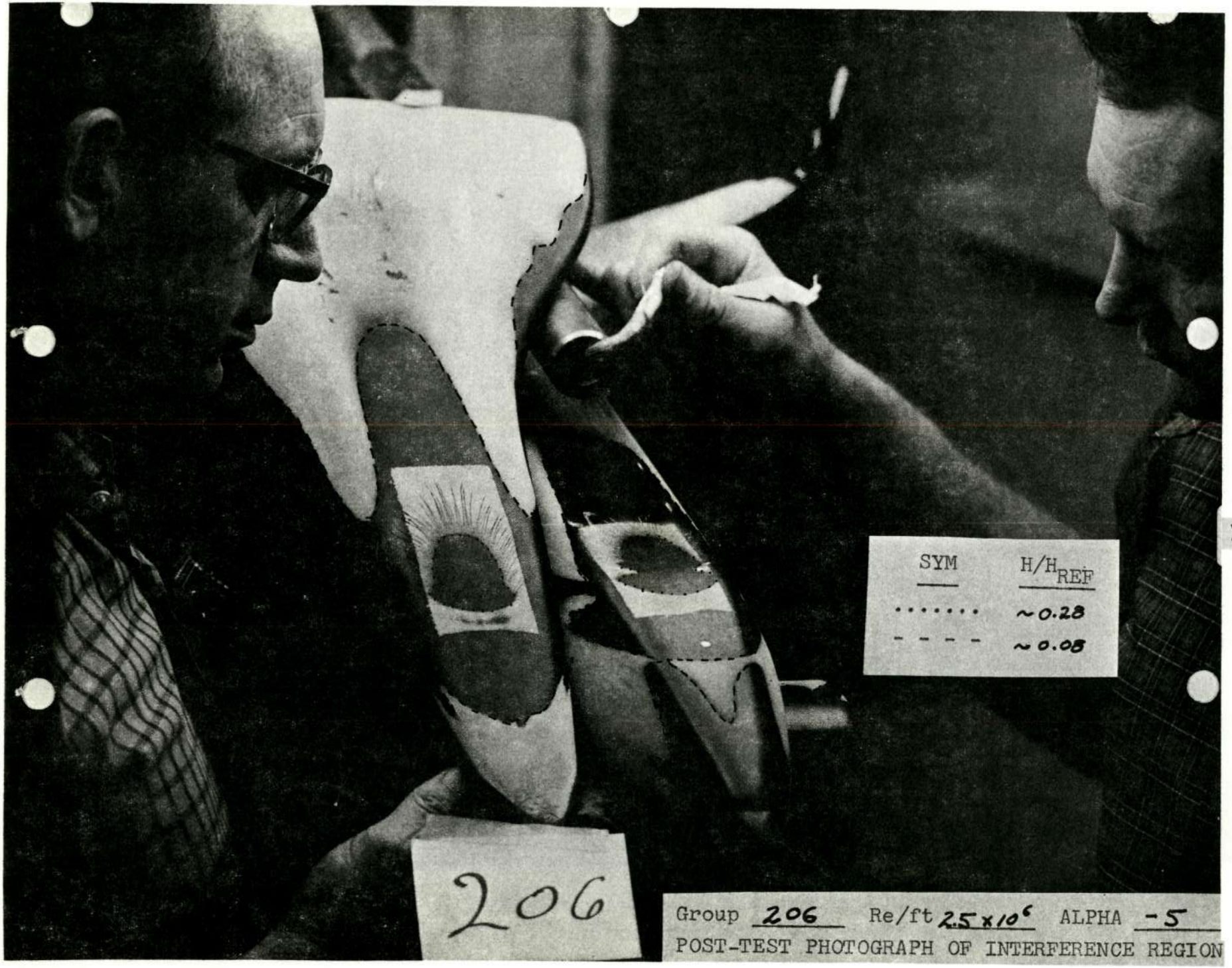


Pic. No. 5290 H/HREF = .0894 BOOSTER
.0940 ORBITER

Group 206 Re/ft 2.44E 06 ALPHA -5



Group 206 Re/ft 2.5×10^6 ALPHA -5

POST-TEST PHOTOGRAPH OF INTERFERENCE REGION

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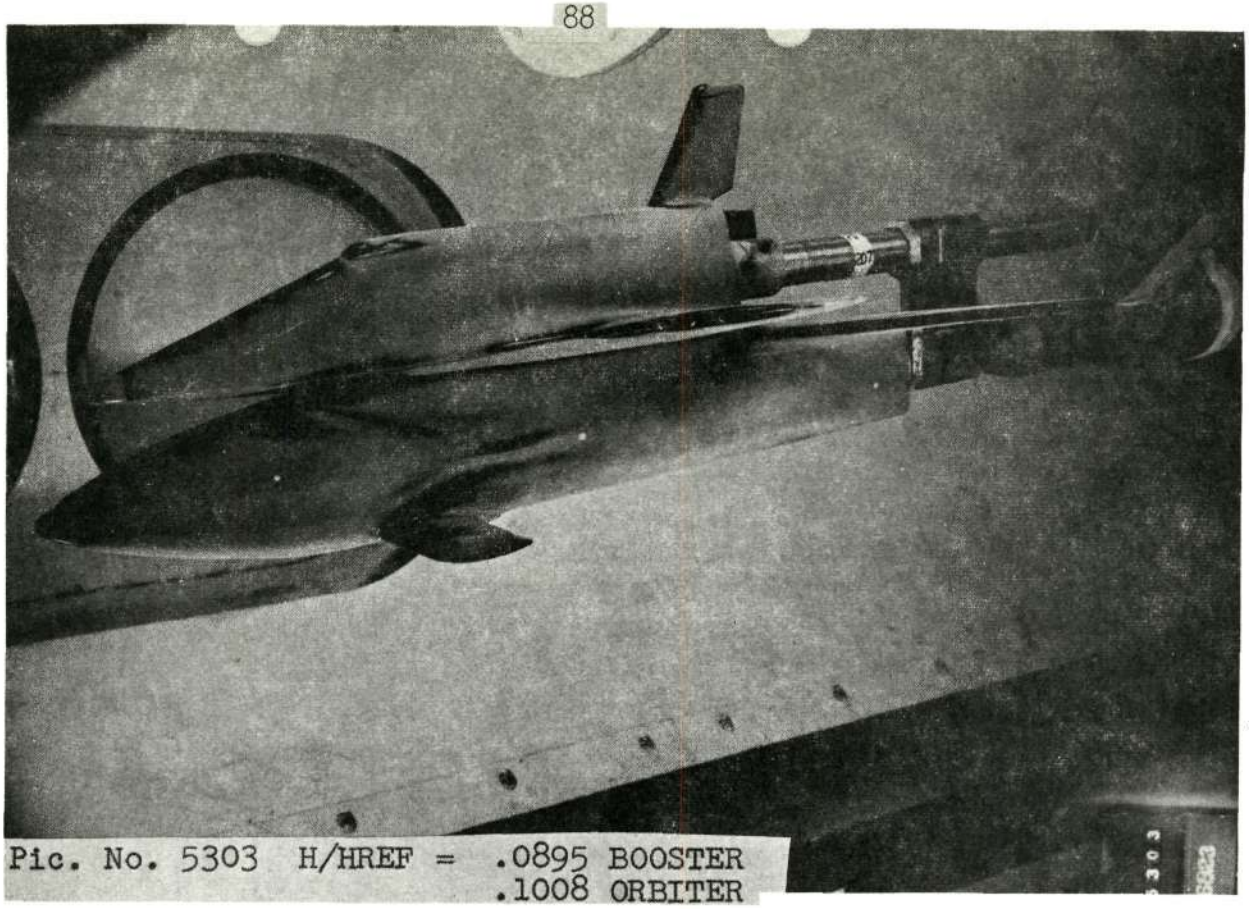
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
207	1222	PDAC-8+DWC	8.00	551.1	1328	-4.99	-4.99	0	0	0

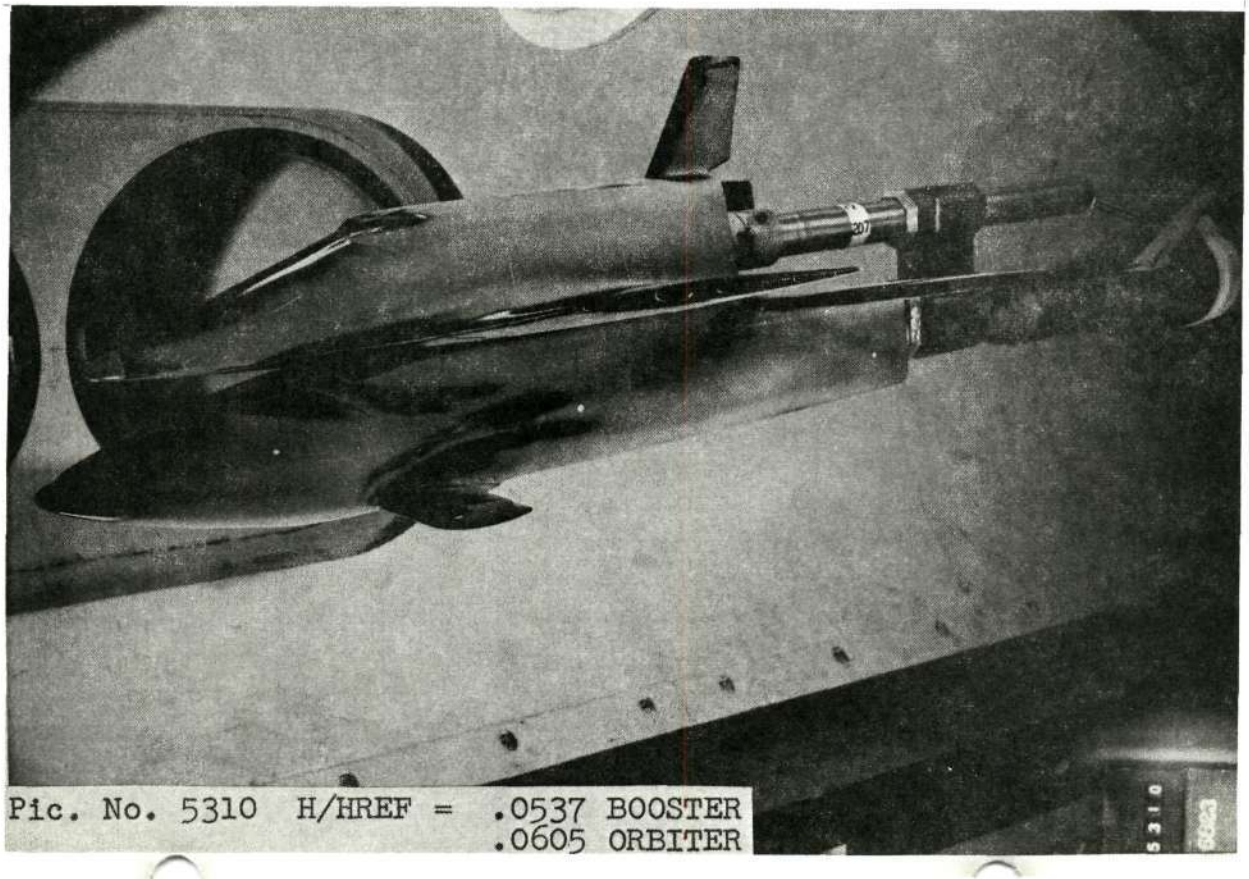
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	HREF (R= .0111FT)	STREF (R= .0111FT)
96.2	.056	2.529	3845	4.923E-05	7.745E-08	2.44E 06	4.997E-02	3.284E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXK)
TOP(T)	150		
SIDE(US)	150	AVERAGE TW = 88 (R)	=.008(SQUARE ROOT DEL TIME) + 0.111
SIDE(LS)	150	AVERAGE TW = 88 (D)	

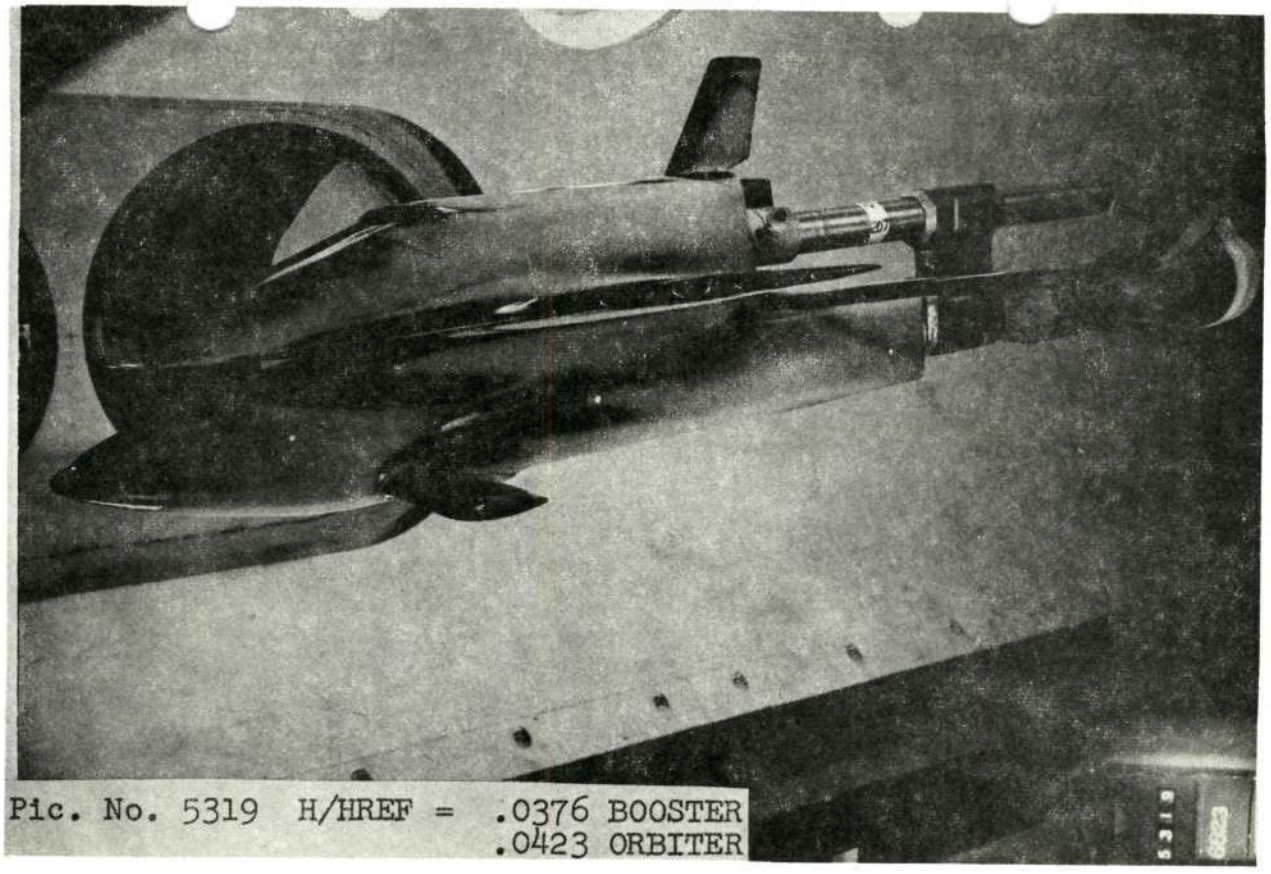
PIC NO	TIME	DELTIME		H(TO)	H(TO)/HREF	H(.9TO)	H(.8TO)/HREF	H(.85TO)	H(.85TO)/HREF	ST(TO)	MODEL	TEMP F	
US 5303 (150)	3.70	2.63	0	5.44E-03	.1008	6.153E-03	.1232	6.922E-03	.1386	3.316E-03	91	86	0 80
US 5303 (150)	3.70	2.63	8	4.47E-03	.0895	5.465E-03	.1094	6.149E-03	.1231	2.943E-03	91	86	0 80
US 5303 (150)	3.70	2.63	8	4.47E-03	.0895	5.465E-03	.1094	6.149E-03	.1231	2.943E-03	91	86	0 80
US 5303 (150)	3.70	2.63	0	5.44E-03	.1008	6.153E-03	.1232	6.922E-03	.1386	3.316E-03	91	86	0 80
US 5310 (150)	7.35	6.28	0	3.42E-03	.0685	3.693E-03	.0739	4.155E-03	.0831	1.988E-03	91	86	0 80
US 5310 (150)	7.35	6.28	8	2.68E-03	.0537	3.280E-03	.0656	3.691E-03	.0738	1.764E-03	91	86	0 80
US 5310 (150)	7.35	6.28	8	2.68E-03	.0537	3.280E-03	.0656	3.691E-03	.0738	1.764E-03	91	86	0 80
US 5310 (150)	7.35	6.28	0	3.42E-03	.0685	3.693E-03	.0739	4.155E-03	.0831	1.988E-03	91	86	0 80
US 5319 (150)	12.10	11.03	0	2.12E-03	.0423	2.585E-03	.0517	2.908E-03	.0582	1.391E-03	95	88	0 82
US 5319 (150)	12.10	11.03	8	1.88E-03	.0376	2.296E-03	.0459	2.583E-03	.0517	1.234E-03	95	88	0 82
US 5319 (150)	12.10	11.03	8	1.88E-03	.0376	2.296E-03	.0459	2.583E-03	.0517	1.234E-03	95	88	0 82
US 5319 (150)	12.10	11.03	0	2.12E-03	.0423	2.585E-03	.0517	2.908E-03	.0582	1.391E-03	95	88	0 82
US 5329 (150)	17.35	16.28	0	1.62E-03	.0325	1.982E-03	.0397	2.230E-03	.0446	1.067E-03	99	89	0 85
US 5329 (150)	17.35	16.28	8	1.44E-03	.0288	1.761E-03	.0352	1.981E-03	.0396	9.467E-04	99	89	0 85
US 5329 (150)	17.35	16.28	8	1.44E-03	.0288	1.761E-03	.0352	1.981E-03	.0396	9.467E-04	99	89	0 85
US 5329 (150)	17.35	16.28	0	1.62E-03	.0325	1.982E-03	.0397	2.230E-03	.0446	1.067E-03	99	89	0 85



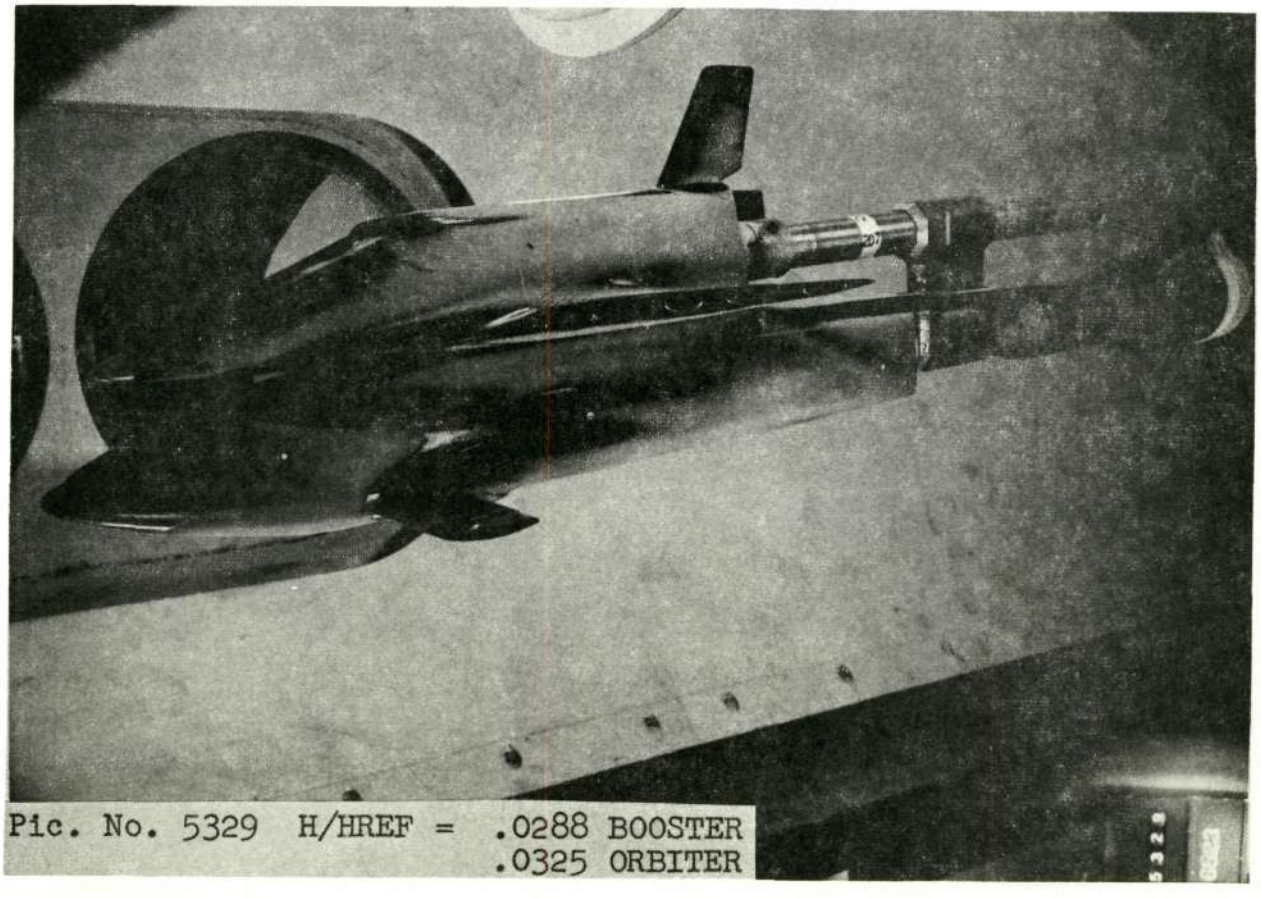
Pic. No. 5303 H/HREF = .0895 BOOSTER
.1008 ORBITER



Pic. No. 5310 H/HREF = .0537 BOOSTER
.0605 ORBITER



Pic. No. 5319 H/HREF = .0376 BOOSTER
.0423 ORBITER



Pic. No. 5329 H/HREF = .0288 BOOSTER
.0325 ORBITER

Group 207 Re/ft 2.44E 06 ALPHA -5

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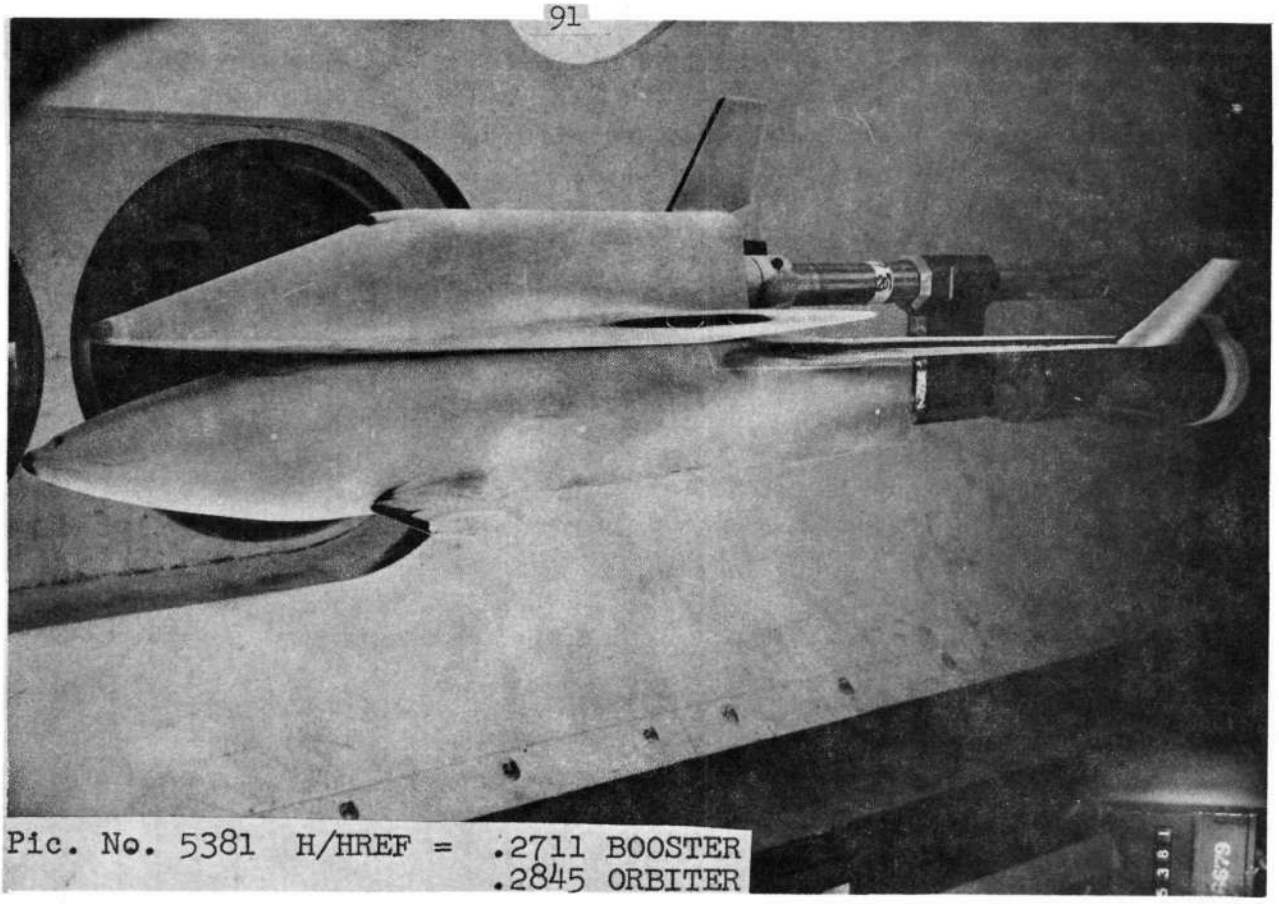
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
209	3222	PDAC-B-DWC	8.00	854.2	1369	.01	.01	0	0	0

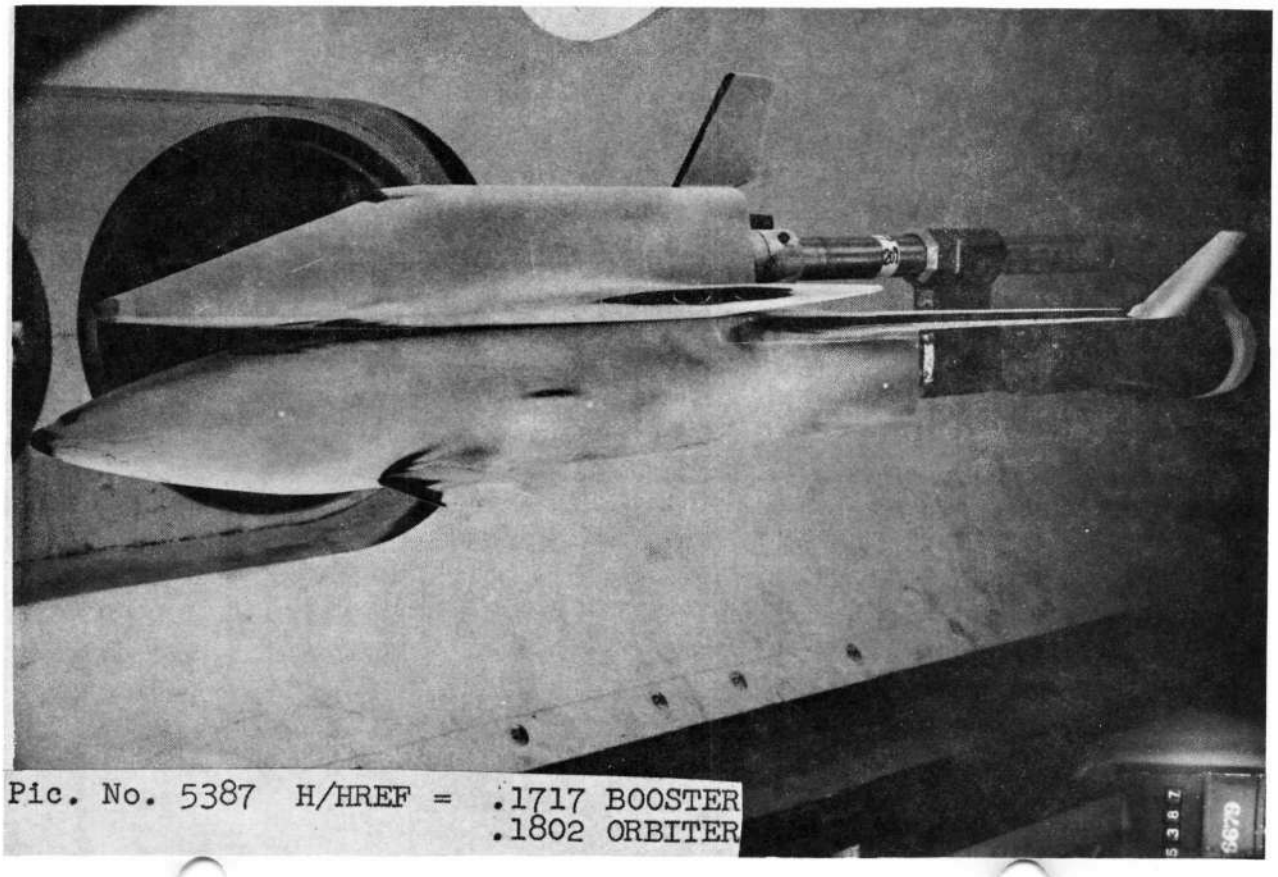
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .01)FT)	STMEF (R= .01)FT)
99.2	.087	3.920	3905	7.399E-05	7.987E-08	3.62E 06	6.256E-02	2.087E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOXCXK)
TOP(T)	300		
SIDE(US)	550	AVERAGE Tw = 91 (B)	=.008(SQUARE ROJT DEL TIME) + 0.11
SIDE(LS)	550	AVERAGE Tw = 80 (C)	

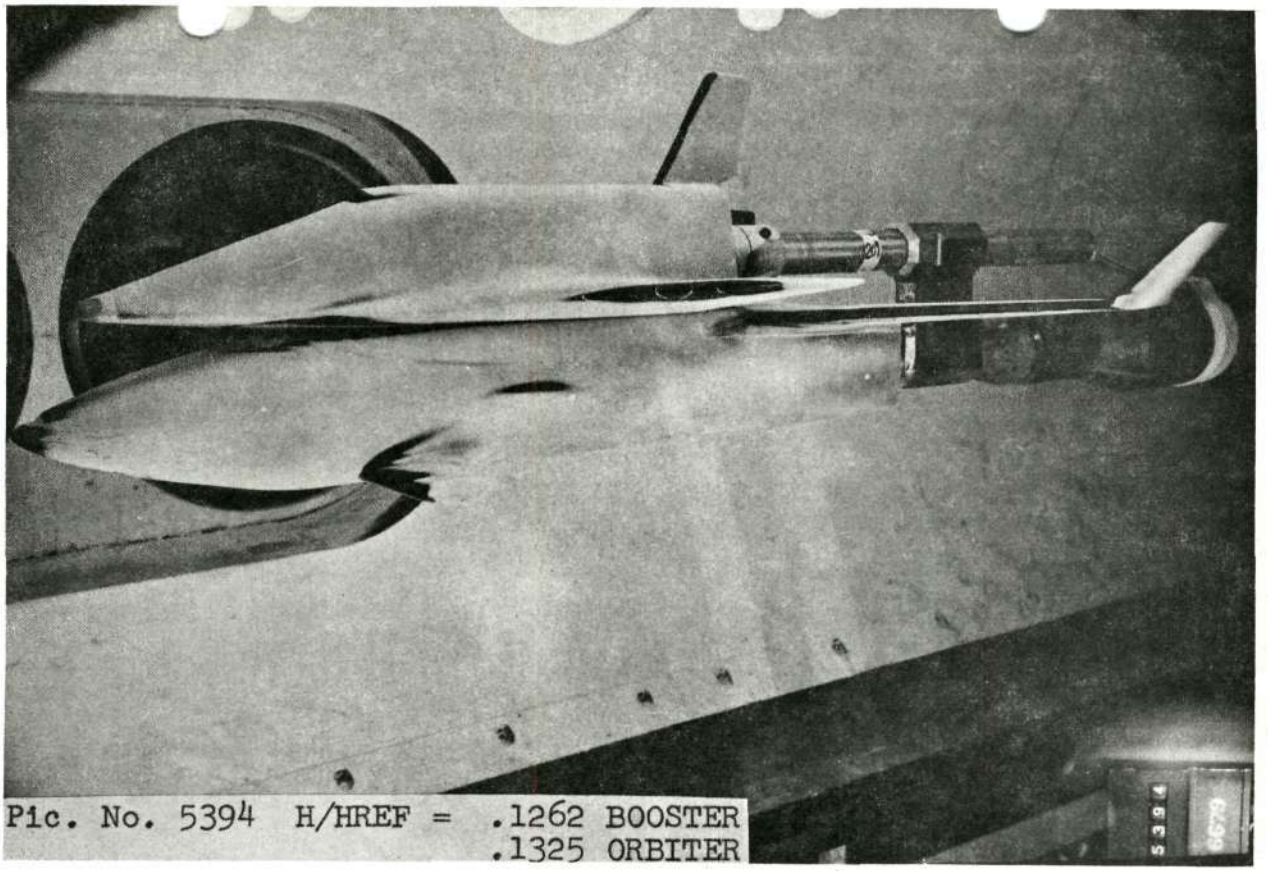
PIC NO	TIME	DELTIME		M(TO)	M(TO)/MREF	M(.9TO)	M(.9TO)/MREF	M(.85TO)	M(.85TO)/MREF	ST(TO)	MODEL	TEMP	F	
US 5381 (550)	3.70	2.66	0	5.82E-02	.9301	8.925E-02	1.4268	1.238E-01	1.9794	2.449E-02	94	88	0	80
US 5381 (300)	3.70	2.66	8	1.70E-02	.2711	2.155E-02	.3446	2.495E-02	.3989	7.234E-03	94	88	0	80
US 5381 (550)	3.70	2.66	8	5.70E-02	.9106	8.740E-02	1.3972	1.212E-01	1.9382	2.398E-02	94	88	0	80
US 5381 (300)	3.70	2.66	0	1.78E-02	.2845	2.261E-02	.3615	2.616E-02	.4183	7.593E-03	94	88	0	80
US 5387 (550)	6.85	5.81	0	3.68E-02	.5889	5.652E-02	.9035	7.841E-02	1.2534	1.551E-02	96	89	0	80
US 5387 (300)	6.85	5.81	8	1.07E-02	.1717	1.365E-02	.2182	1.580E-02	.2526	4.581E-03	96	89	0	80
US 5387 (550)	6.85	5.81	8	3.61E-02	.5766	5.534E-02	.8847	7.677E-02	1.2273	1.518E-02	96	89	0	80
US 5387 (300)	6.85	5.81	0	1.13E-02	.1802	1.432E-02	.2289	1.657E-02	.2649	4.808E-03	96	89	0	80
US 5394 (550)	10.55	9.51	0	2.71E-02	.4330	4.155E-02	.6643	5.765E-02	.9216	1.140E-02	102	89	0	81
US 5394 (300)	10.55	9.51	8	7.90E-03	.1262	1.003E-02	.1604	1.162E-02	.1857	3.368E-03	102	89	0	81
US 5394 (550)	10.55	9.51	8	2.65E-02	.4240	4.069E-02	.6505	5.645E-02	.9024	1.116E-02	102	89	0	81
US 5394 (300)	10.55	9.51	0	8.29E-03	.1325	1.053E-02	.1683	1.218E-02	.1947	3.535E-03	102	89	0	81
US 5400 (550)	13.75	12.71	0	2.24E-02	.3578	3.432E-02	.5489	4.762E-02	.7615	9.422E-03	109	98	0	83
US 5400 (300)	13.75	12.71	8	6.52E-03	.1043	8.289E-03	.1325	9.595E-03	.1534	2.783E-03	109	98	0	83
US 5400 (550)	13.75	12.71	8	2.19E-02	.3503	3.361E-02	.5375	4.663E-02	.7456	9.224E-03	109	98	0	83
US 5400 (300)	13.75	12.71	0	6.84E-03	.1095	8.695E-03	.1391	1.006E-02	.1609	2.921E-03	109	98	0	83



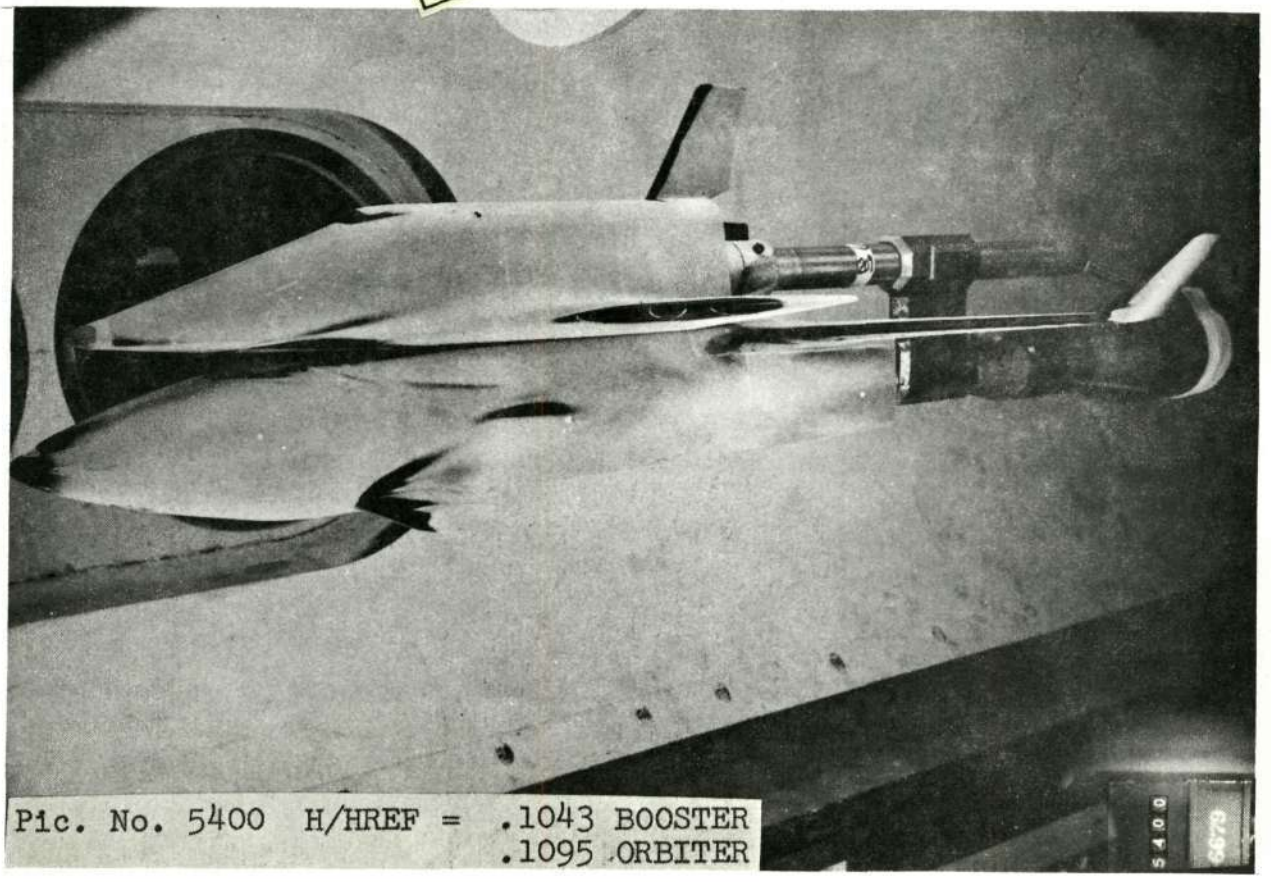
Pic. No. 5381 H/HREF = .2711 BOOSTER
.2845 ORBITER



Pic. No. 5387 H/HREF = .1717 BOOSTER
.1802 ORBITER



Pic. No. 5394 H/HREF = .1262 BOOSTER
.1325 ORBITER



Pic. No. 5400 H/HREF = .1043 BOOSTER
.1095 ORBITER

Group 209 Re/ft 3.7×10^6 ALPHA 0

POST-TEST PHOTOGRAPH OF INTERFERENCE REGION

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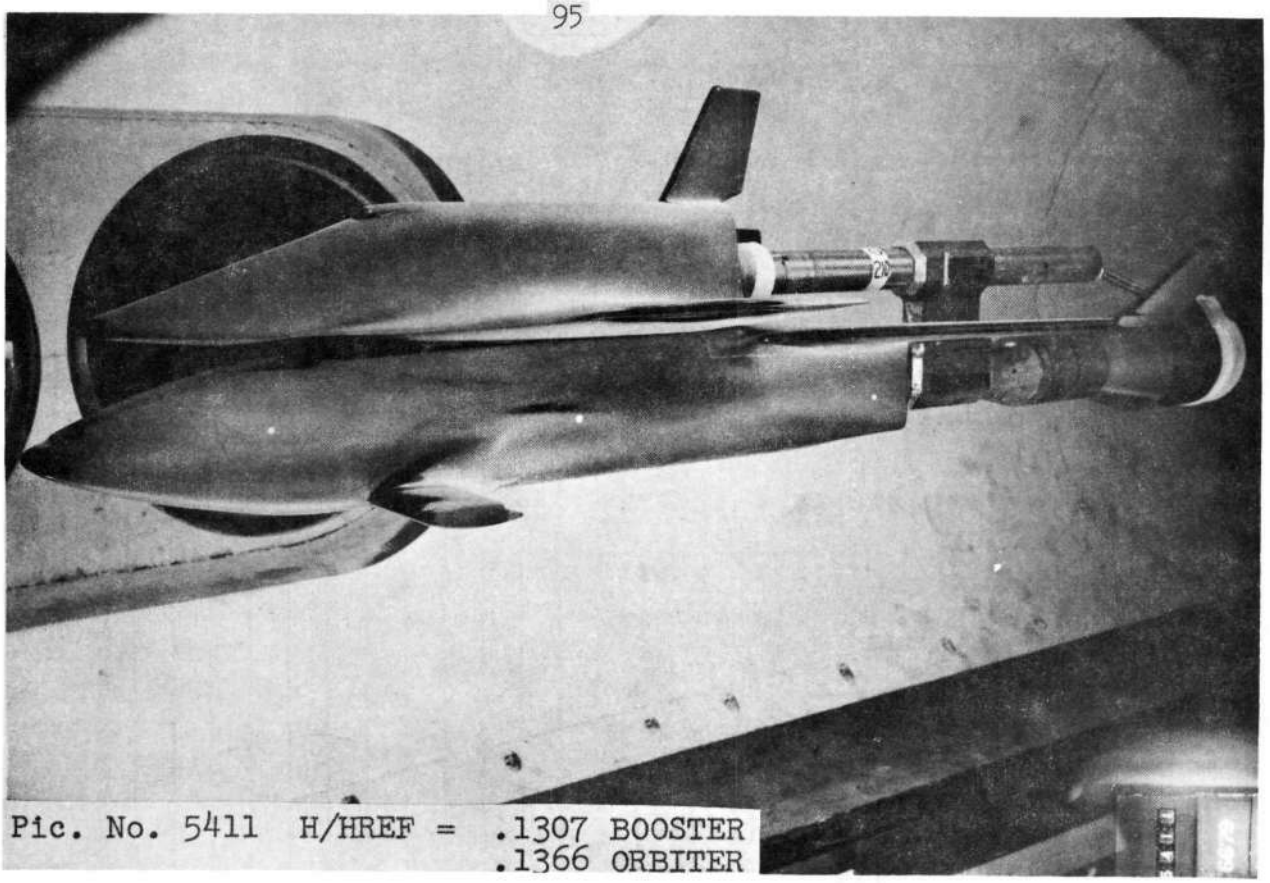
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
V11162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
210	3121	MDAC-B-DWC	8.00	855.9	1333	-.00	-.00	0	0	0

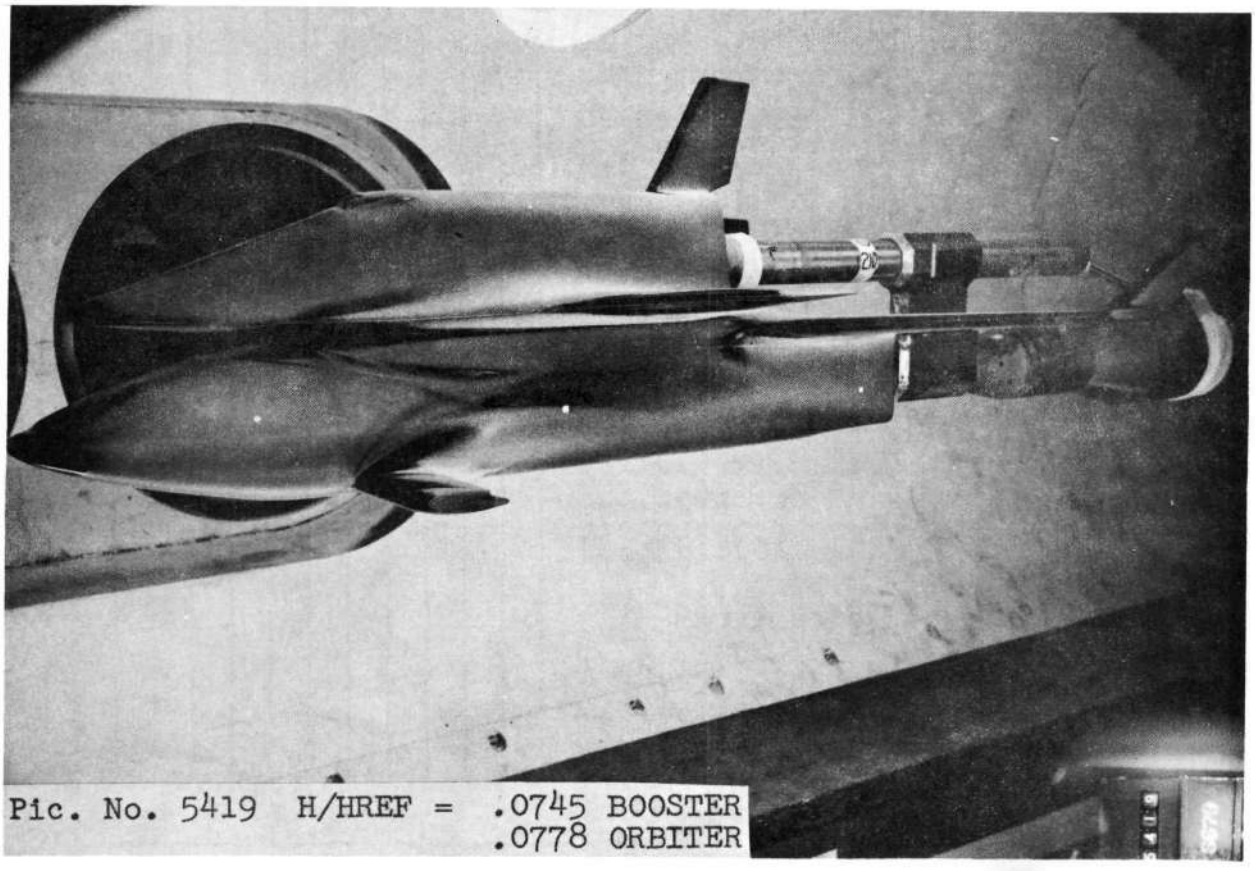
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .011FT)	STREF (R= .011FT)
96.6	.088	3.928	8853	7.613E-05	7.779E-08	3.77E 06	6.234E-02	2.642E-02

CAMERA	PAINT TEMP (DEG F)	INITIAL TEMP (DEG F)	SQUARE ROOT (RHOACAK)
TOP(I)	200		
SIDE(US)	200	AVERAGE TW = 93 (8)	-.008(SQUARE ROOT DEL TIME) + 0.11
SIDE(LS)	200	AVERAGE TW = 88 (0)	

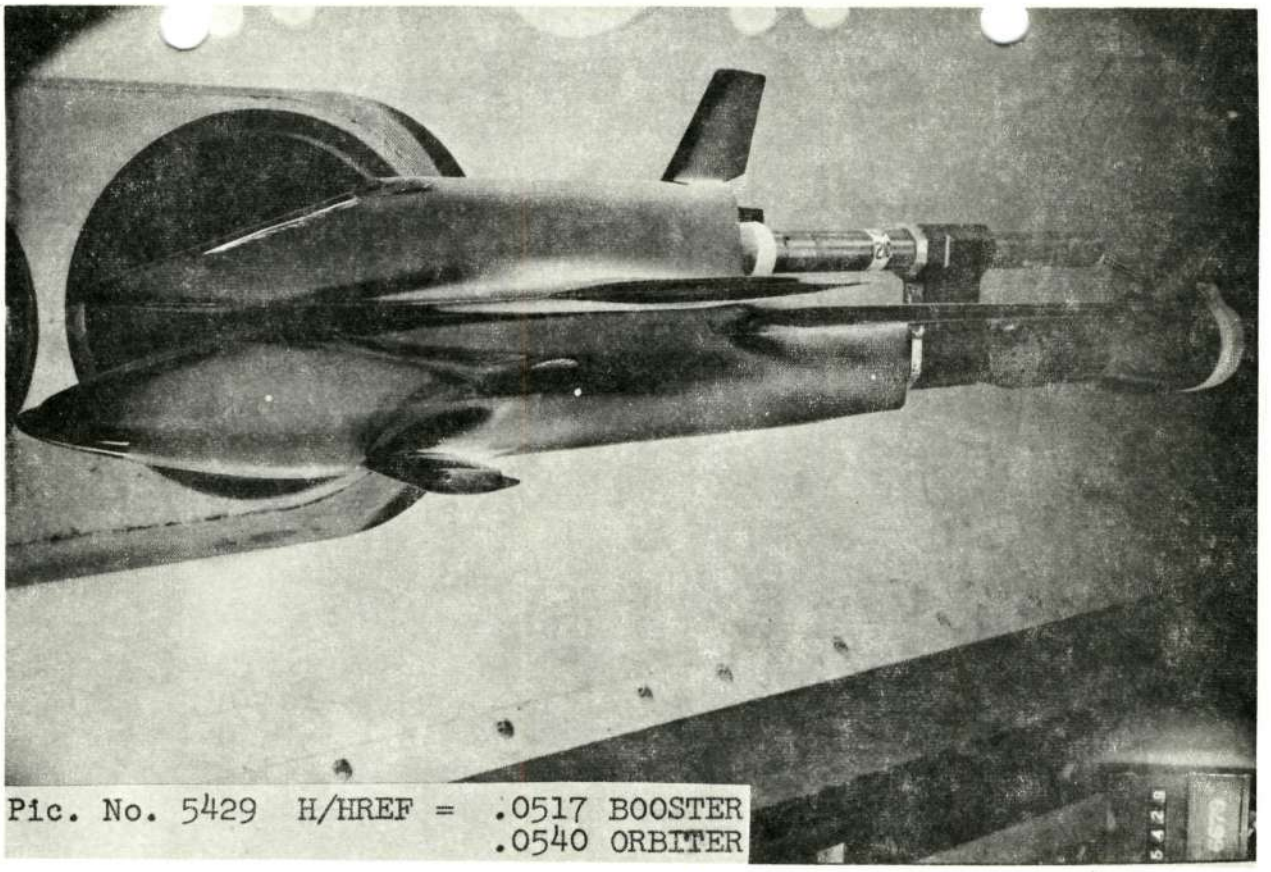
PIC NO	TIME	DELTIME		M(TO)	M(TO)/MREF	M(.9TO)	M(.9TO)/MREF	M(.85TO)	M(.85TO)/MREF	ST(TO)	MODEL	TEMP	F	
US 5411 (200)	3.70	2.66	0	6.51E-03	.1366	1.053E-02	.1690	1.196E-02	.1919	3.602E-03	95	90	0	87
US 5411 (200)	3.70	2.66	8	6.15E-03	.1307	1.00YE-02	.1619	1.145E-02	.1838	3.448E-03	95	90	0	87
US 5411 (200)	3.70	2.66	8	6.15E-03	.1307	1.00YE-02	.1619	1.145E-02	.1838	3.448E-03	95	90	0	87
US 5411 (200)	3.70	2.66	0	6.51E-03	.1366	1.053E-02	.1690	1.196E-02	.1919	3.602E-03	95	90	0	87
US 5419 (200)	7.95	6.91	0	4.85E-03	.0778	5.998E-03	.0963	6.809E-03	.1093	2.052E-03	99	90	0	87
US 5419 (200)	7.95	6.91	8	4.64E-03	.0745	5.744E-03	.0922	6.521E-03	.1047	1.965E-03	99	90	0	87
US 5419 (200)	7.95	6.91	8	4.64E-03	.0745	5.744E-03	.0922	6.521E-03	.1047	1.965E-03	99	90	0	87
US 5419 (200)	7.95	6.91	0	4.85E-03	.0778	5.998E-03	.0963	6.809E-03	.1093	2.052E-03	99	90	0	87
US 5426 (200)	13.25	12.21	0	3.36E-03	.0540	4.161E-03	.0668	4.724E-03	.0759	1.425E-03	110	92	0	88
US 5426 (200)	13.25	12.21	8	3.22E-03	.0517	3.985E-03	.0640	4.524E-03	.0726	1.364E-03	110	92	0	88
US 5426 (200)	13.25	12.21	8	3.22E-03	.0517	3.985E-03	.0640	4.524E-03	.0726	1.364E-03	110	92	0	88
US 5426 (200)	13.25	12.21	0	3.36E-03	.0540	4.161E-03	.0668	4.724E-03	.0759	1.425E-03	110	92	0	88
US 5439 (200)	18.55	17.51	0	2.62E-03	.0421	3.241E-03	.0521	3.680E-03	.0591	1.110E-03	122	93	0	89
US 5439 (200)	18.55	17.51	8	2.51E-03	.0403	3.104E-03	.0499	3.524E-03	.0566	1.063E-03	122	93	0	89
US 5439 (200)	18.55	17.51	8	2.51E-03	.0403	3.104E-03	.0499	3.524E-03	.0566	1.063E-03	122	93	0	89
US 5439 (200)	18.55	17.51	0	2.62E-03	.0421	3.241E-03	.0521	3.680E-03	.0591	1.110E-03	122	93	0	89



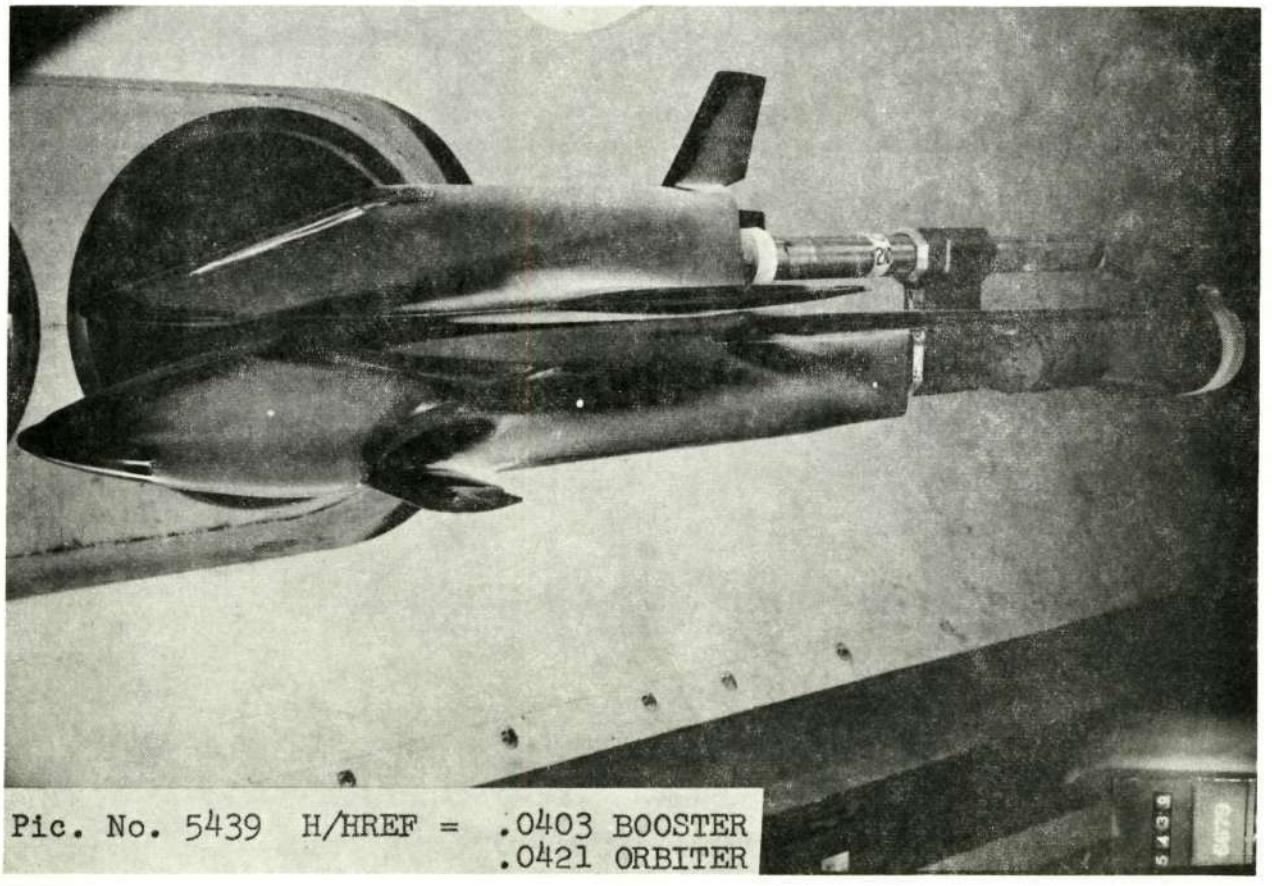
Pic. No. 5411 H/HREF = .1307 BOOSTER
.1366 ORBITER



Pic. No. 5419 H/HREF = .0745 BOOSTER
.0778 ORBITER



Pic. No. 5429 H/HREF = .0517 BOOSTER
.0540 ORBITER



Pic. No. 5439 H/HREF = .0403 BOOSTER
.0421 ORBITER

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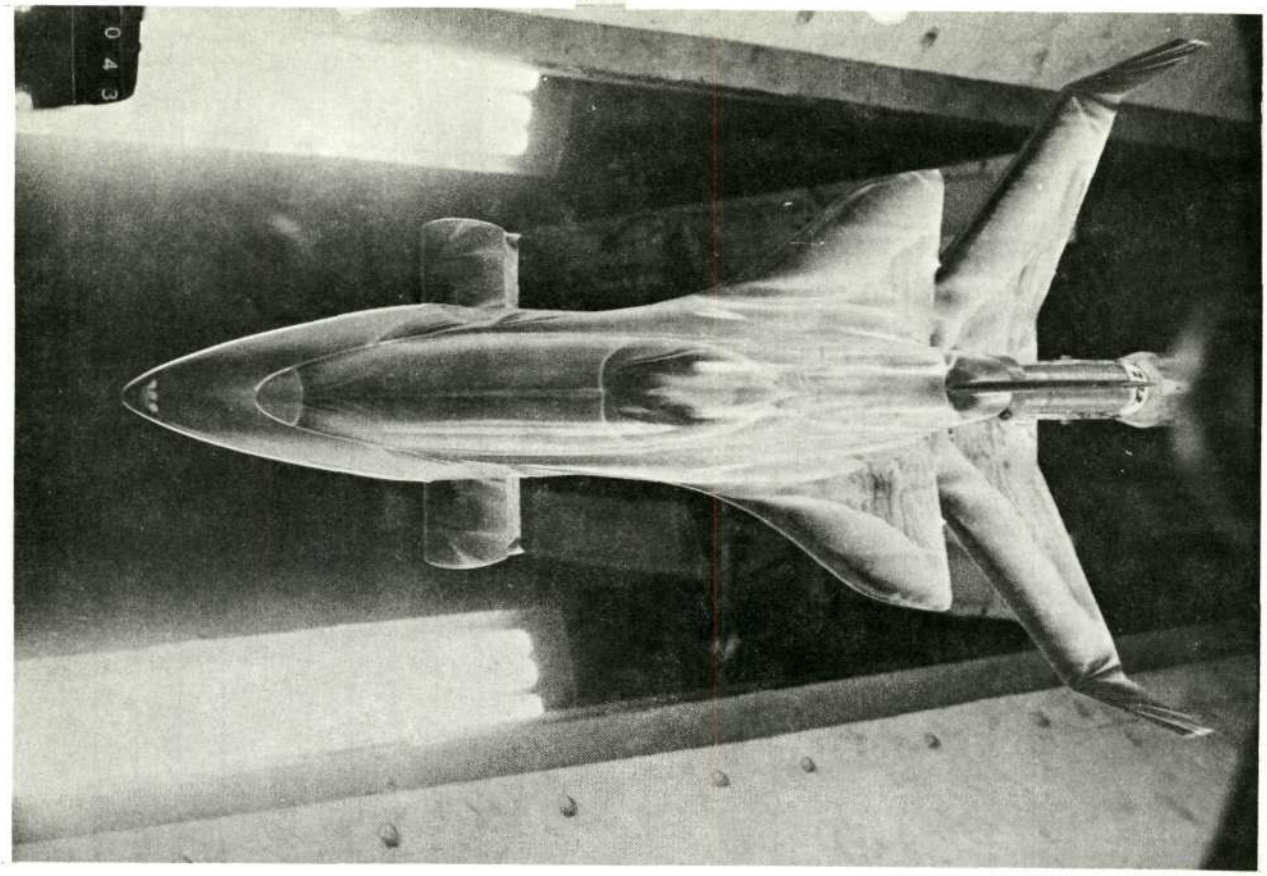
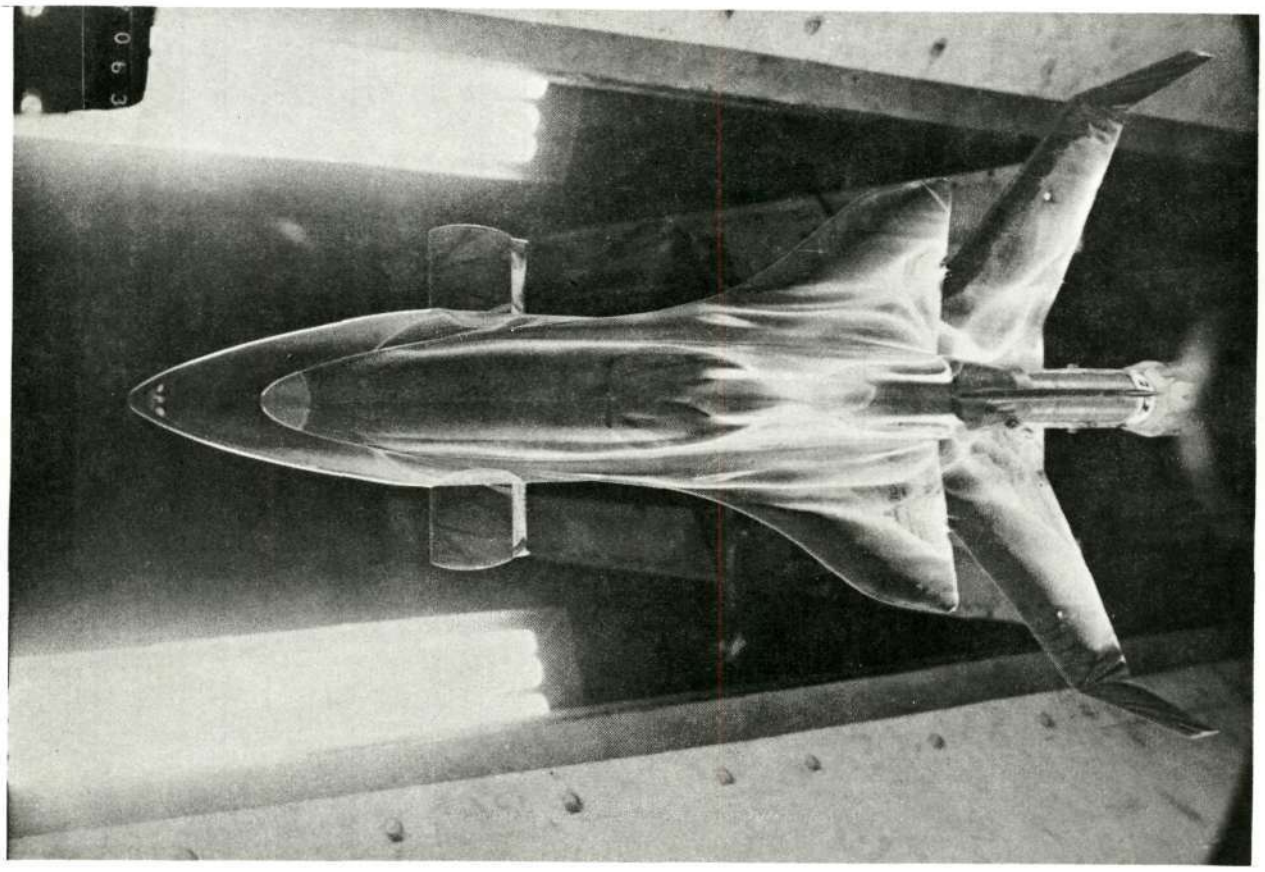
AEDC(AHO.INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
V11162

GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
222	3222	MDAC-B-DWC	8.00	550.7	1305	.01	.01	0	0	0

T-INF (DEG R)	P-INF (PSIA)	U-INF (FT/SEC)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT**1)	RREF (R= .011FT)	SIREF (R= .011FT)
94.6	.056	2.527	3812	5.003E-05	7.615E-08	2.50E 06	4.981E-02	3.252E-02

OIL FLOW


0 4 3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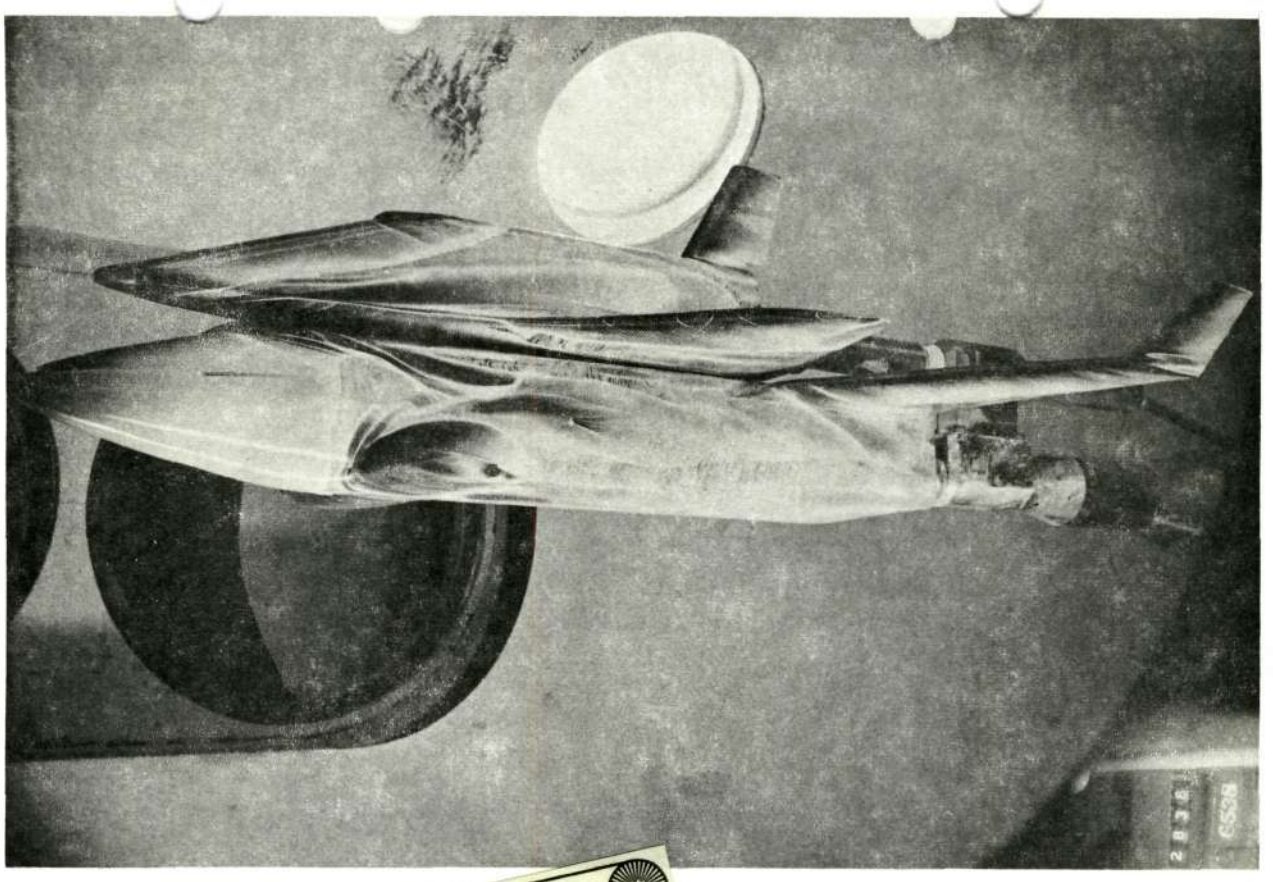

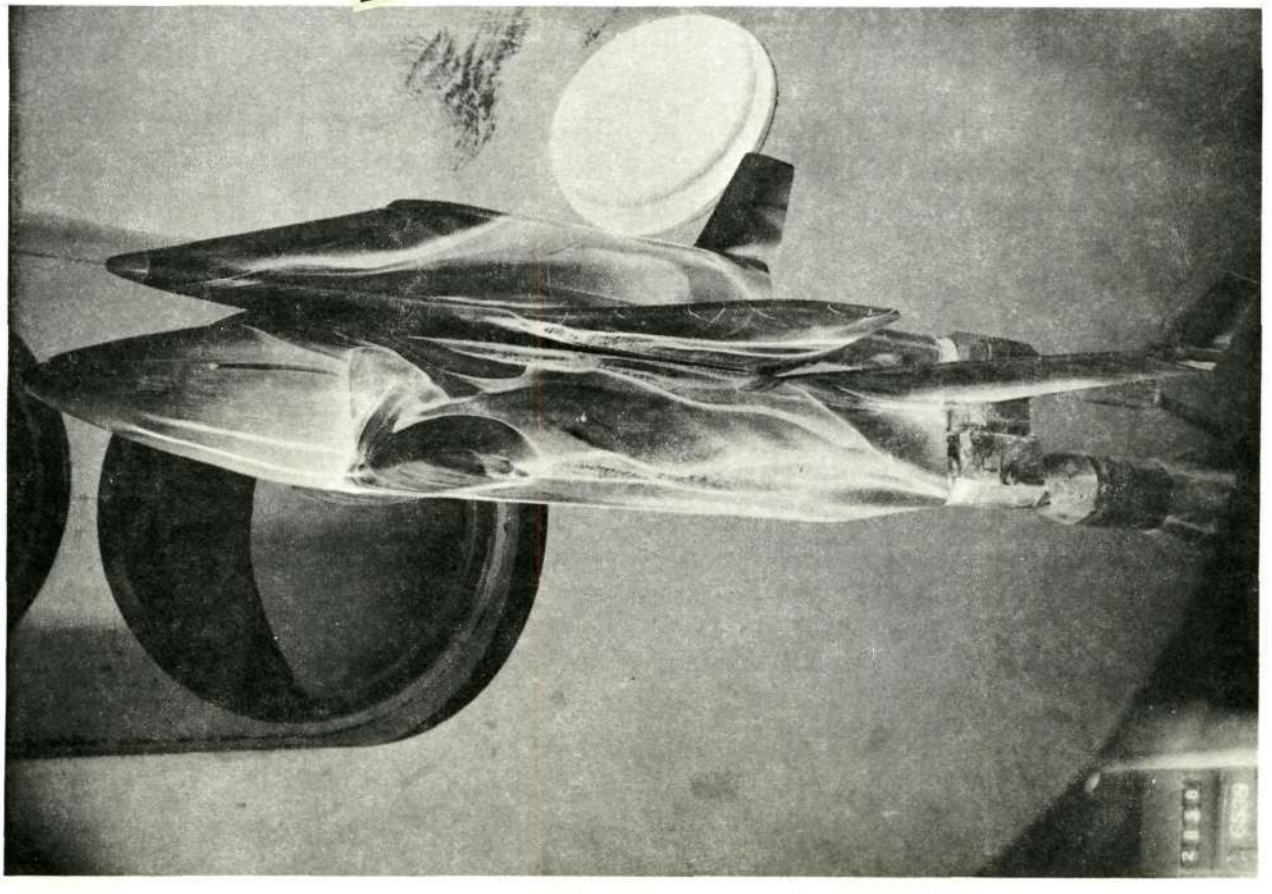

Group 222 Re/ft 2.50E 06 ALPHA 0

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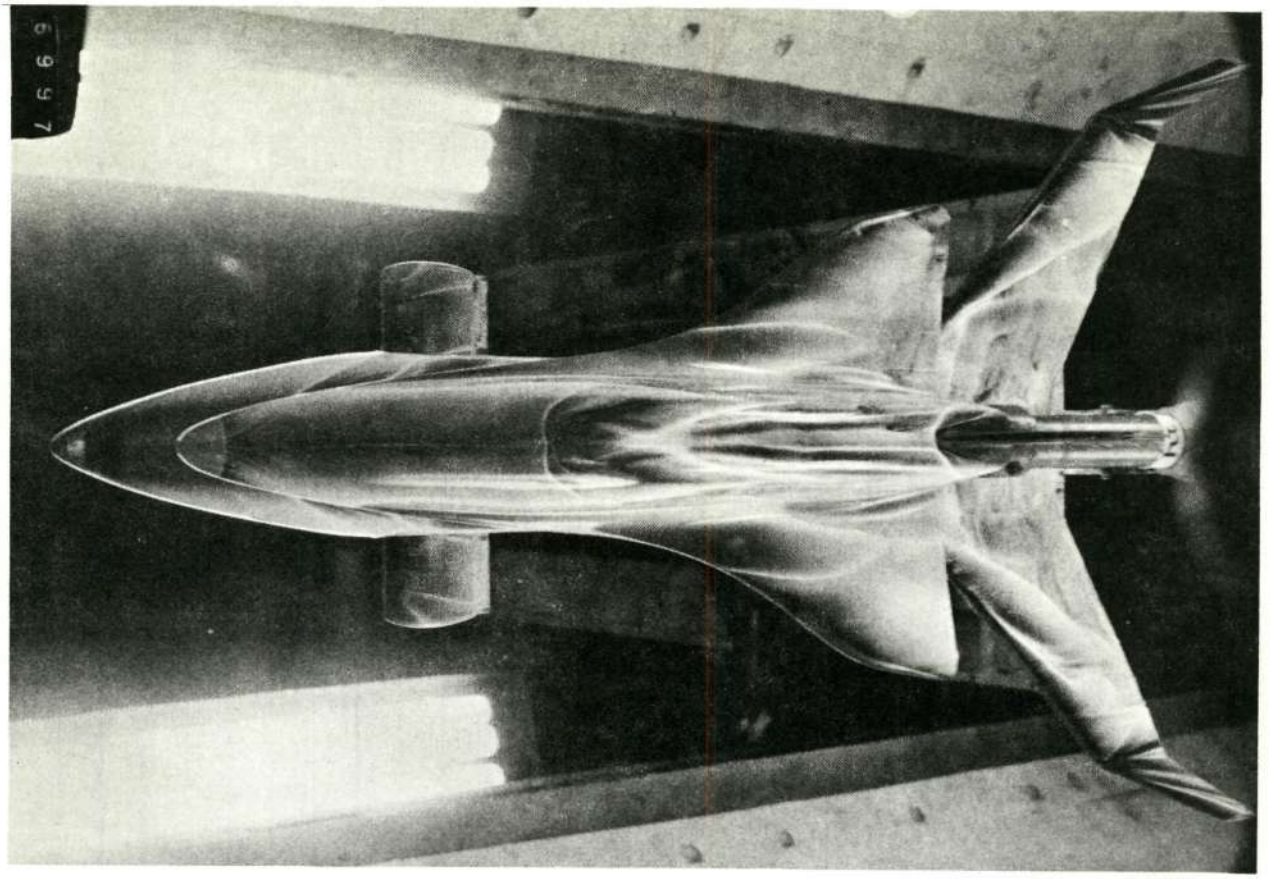
AEDC(AHO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

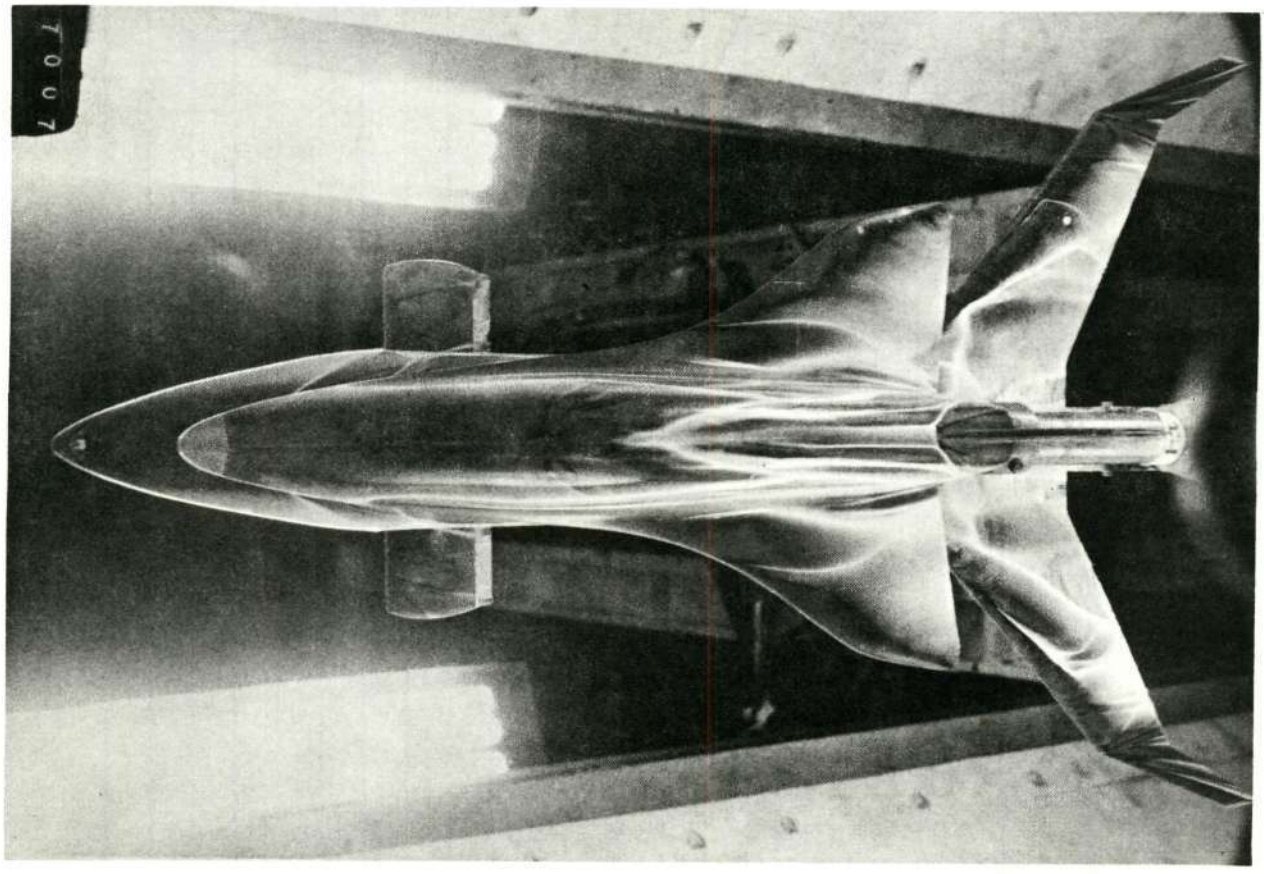
GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
221	3222	MDAC-B+DWG	8.00	548.7	1310	-5.02	-5.02	0	0	0

T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	MREF (R= .011FT)	STREF (R= .011FT)
94.9	.056	2.518	3819	4.969E-05	7.640E-08	2.48E 06	4.976E-02	3.264E-02

OIL FLOW

100


6697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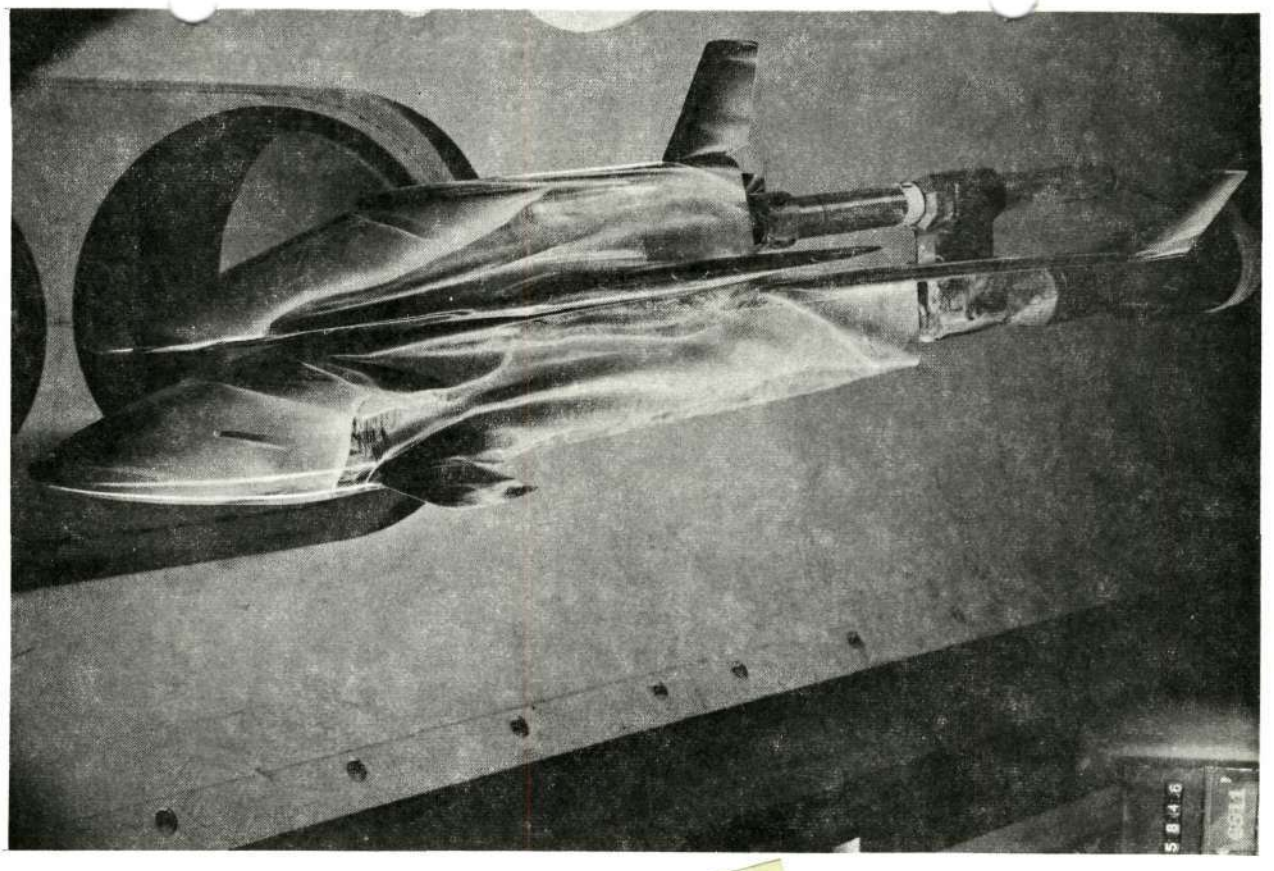

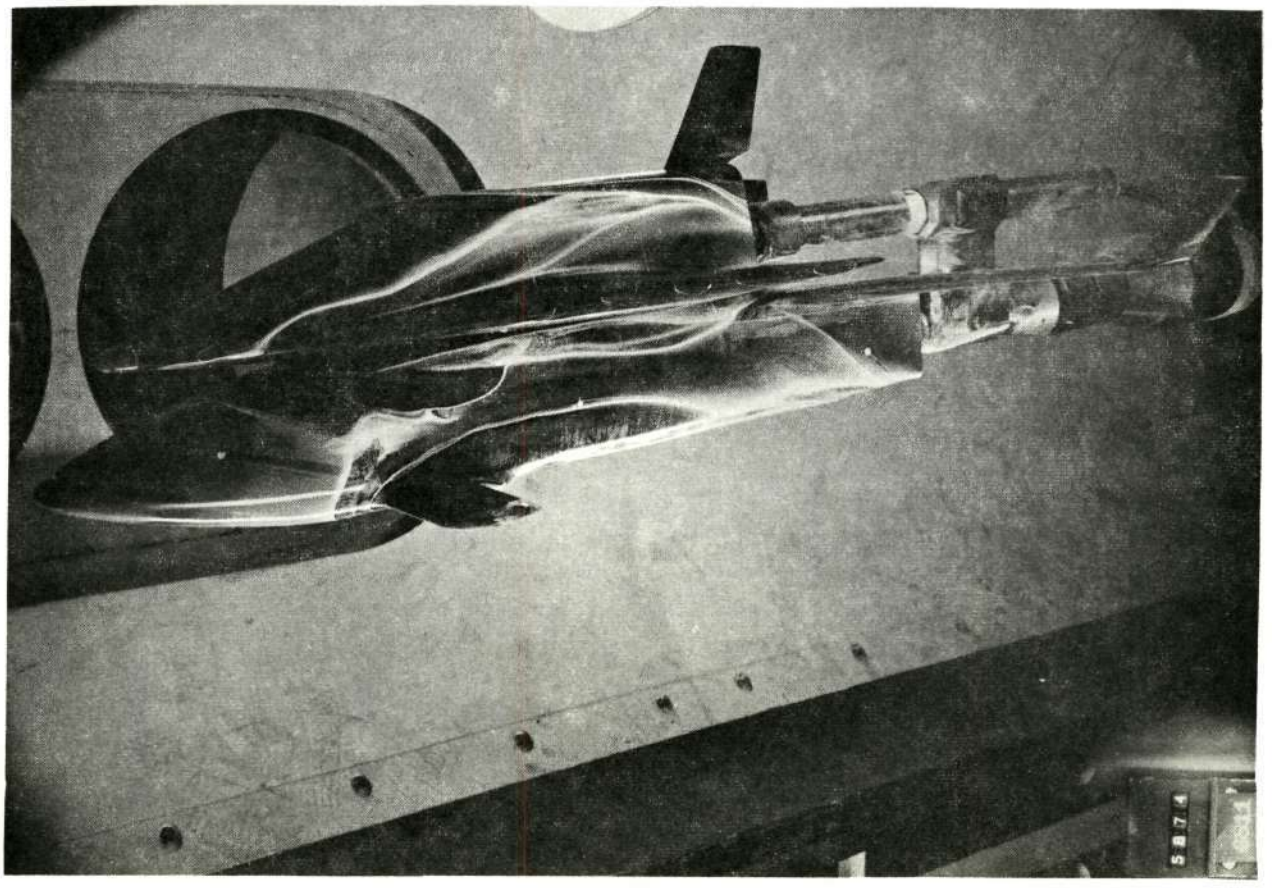

Group 221 Re/ft 2.48E 06 ALPHA -5

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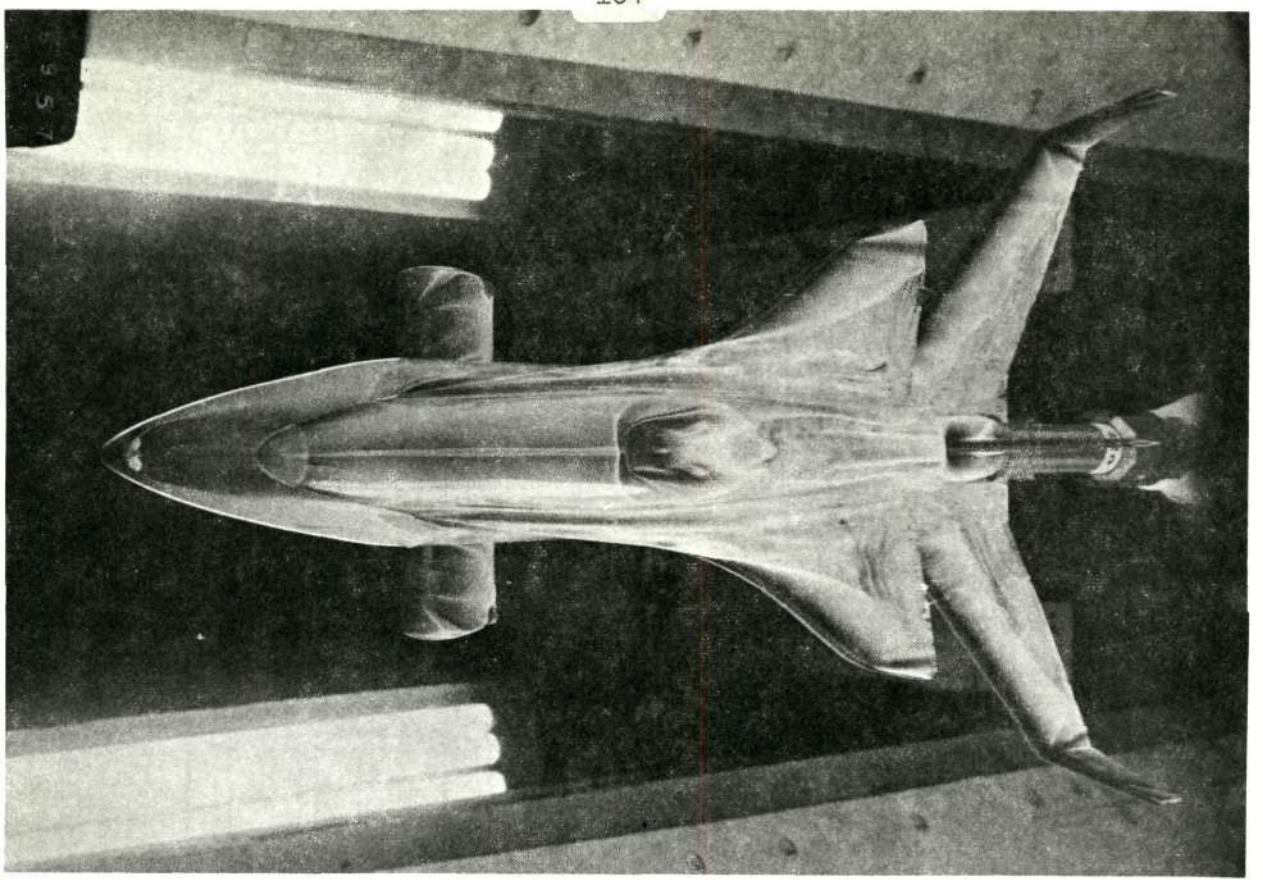
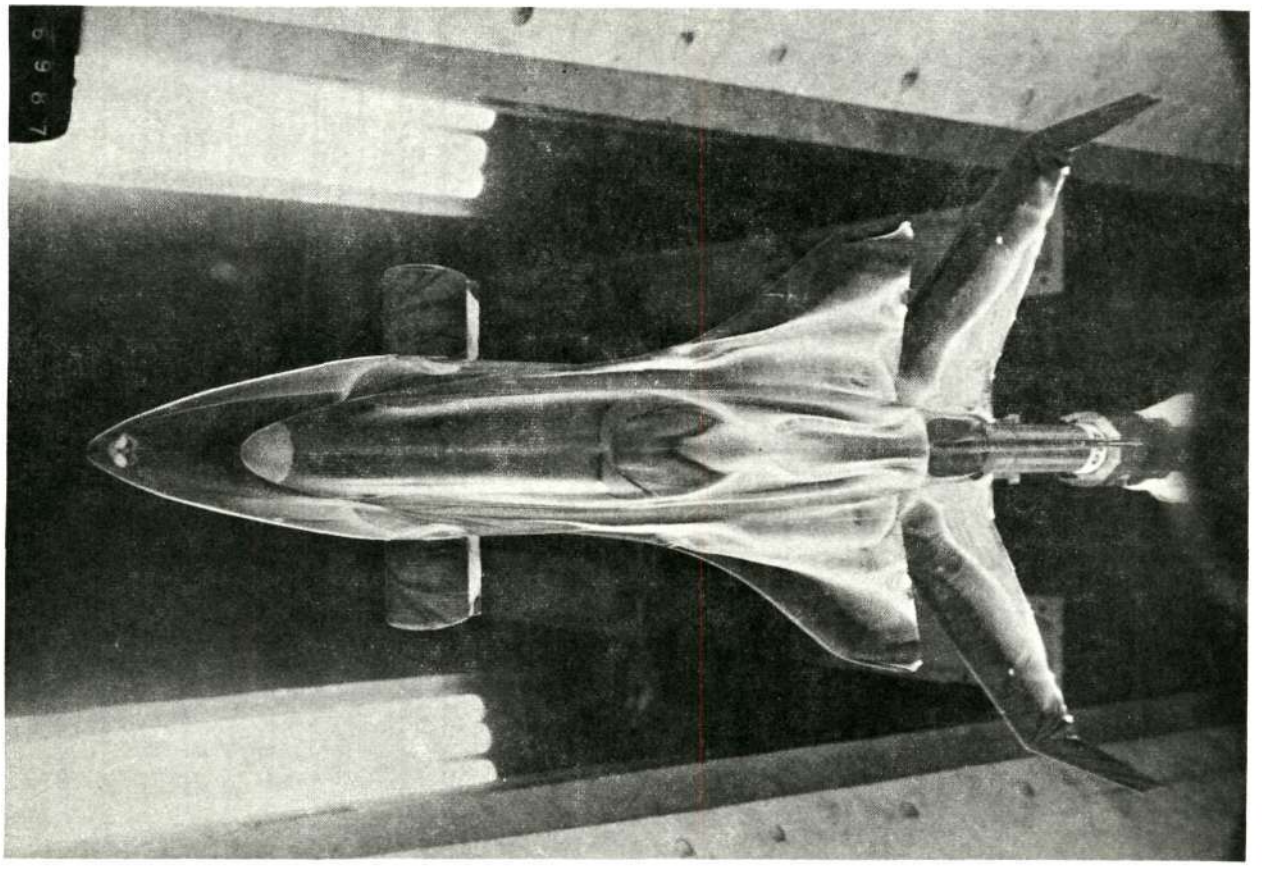
AEDC(ARO,INC.) ARNOLD AFS, TENNESSEE
VON KARMAN GAS DYNAMICS FACILITY
50 INCH HYPERSONIC TUNNEL B
VT1162

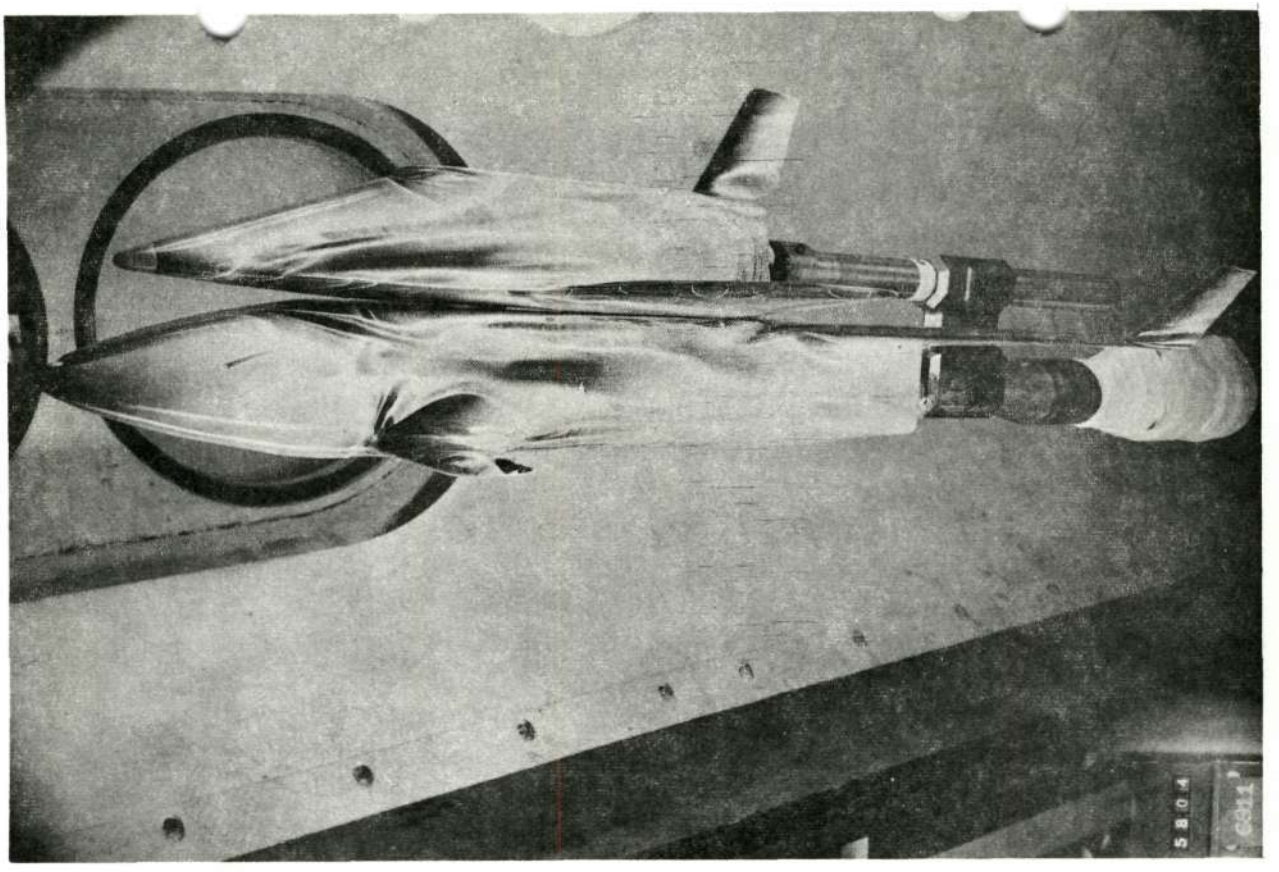
GROUP	CONFIG	MODEL	MACH NO	PO PSIA	TO DEG R	ALPHA-MODEL	ALPHA-SECTOR	ALPHA-PREBEND	ROLL-MODEL	YAW
220	3222	MDAC-B-D-C	8.00	549.5	1308	5.01	5.01	0	0	0

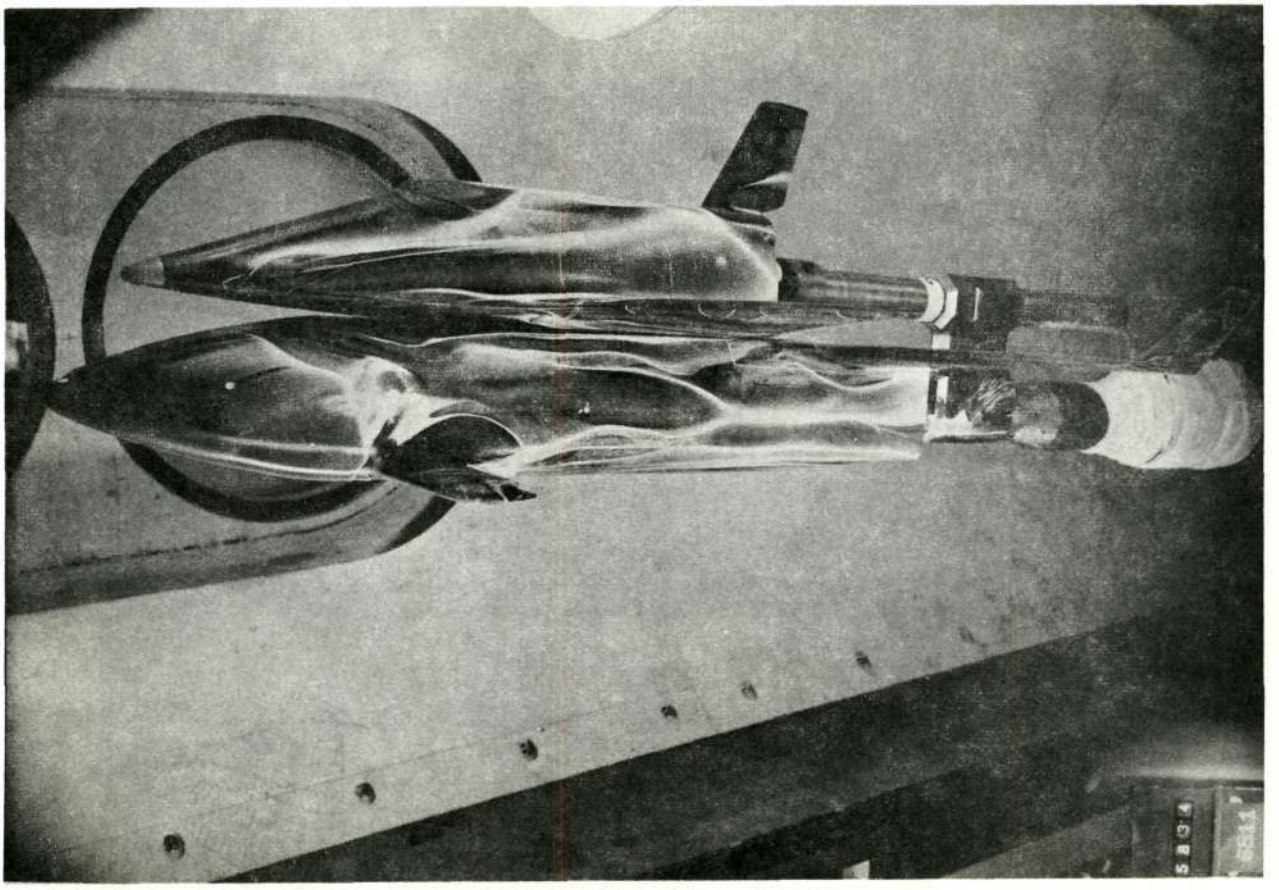
T-INF (DEG R)	P-INF (PSIA)	Q-INF (PSIA)	V-INF (FT/SEC)	RHO-INF (SLUGS/FT3)	MU-INF (LB-SEC/FT2)	RE/FT (FT-1)	RREF (R= .011FT)	STREF (R= .011FT)
94.8	.056	2.522	3817	4.980E-05	7.634E-08	2.49E 06	4.978E-02	3.260E-02

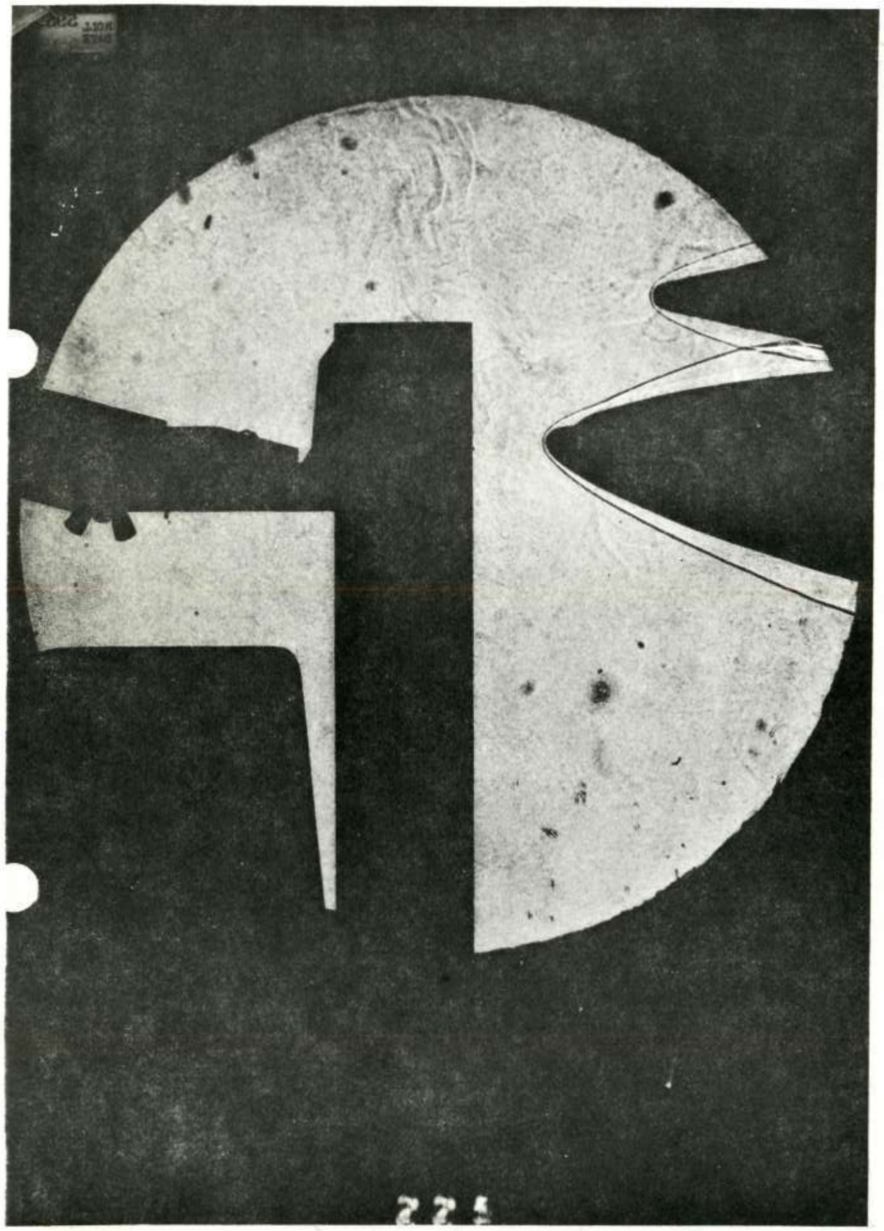
OIL FLOW

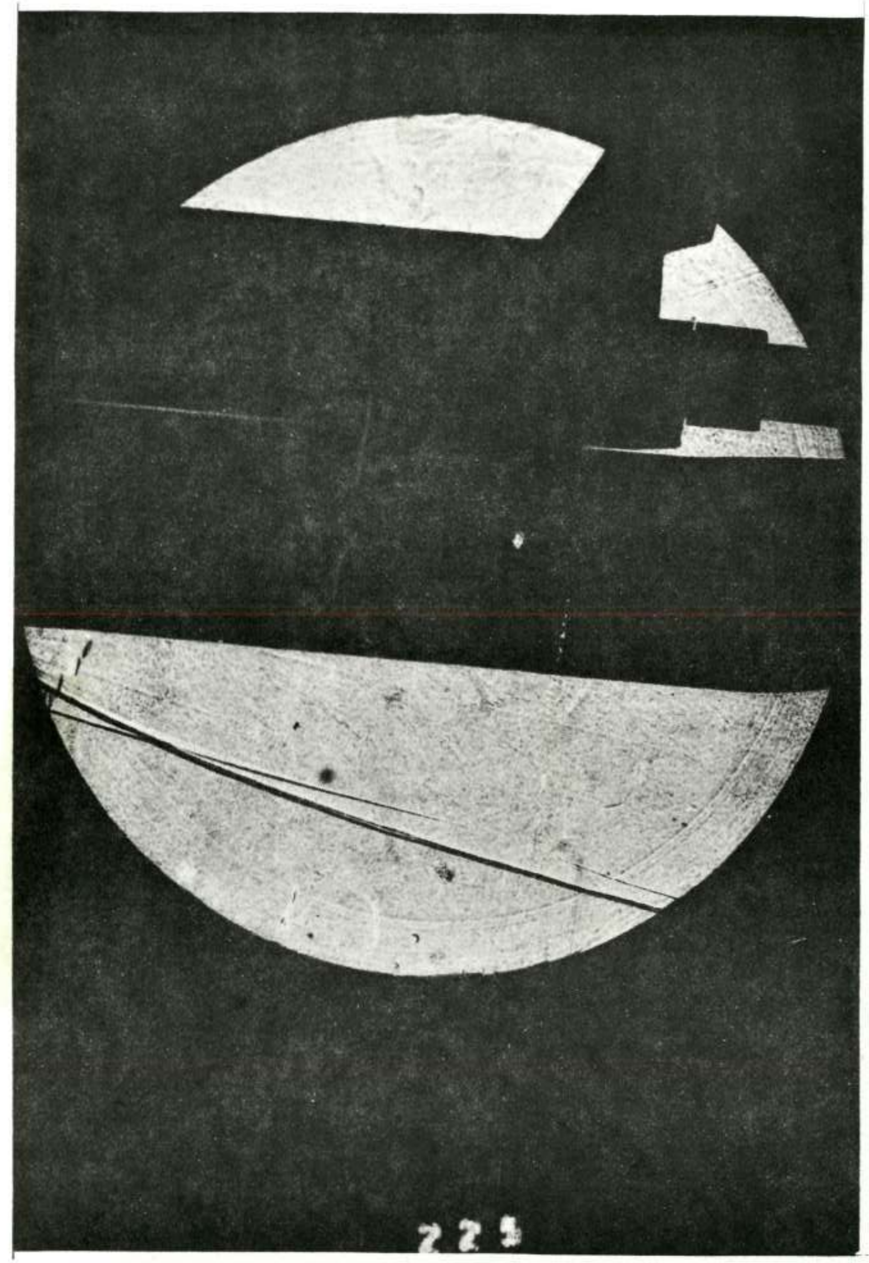




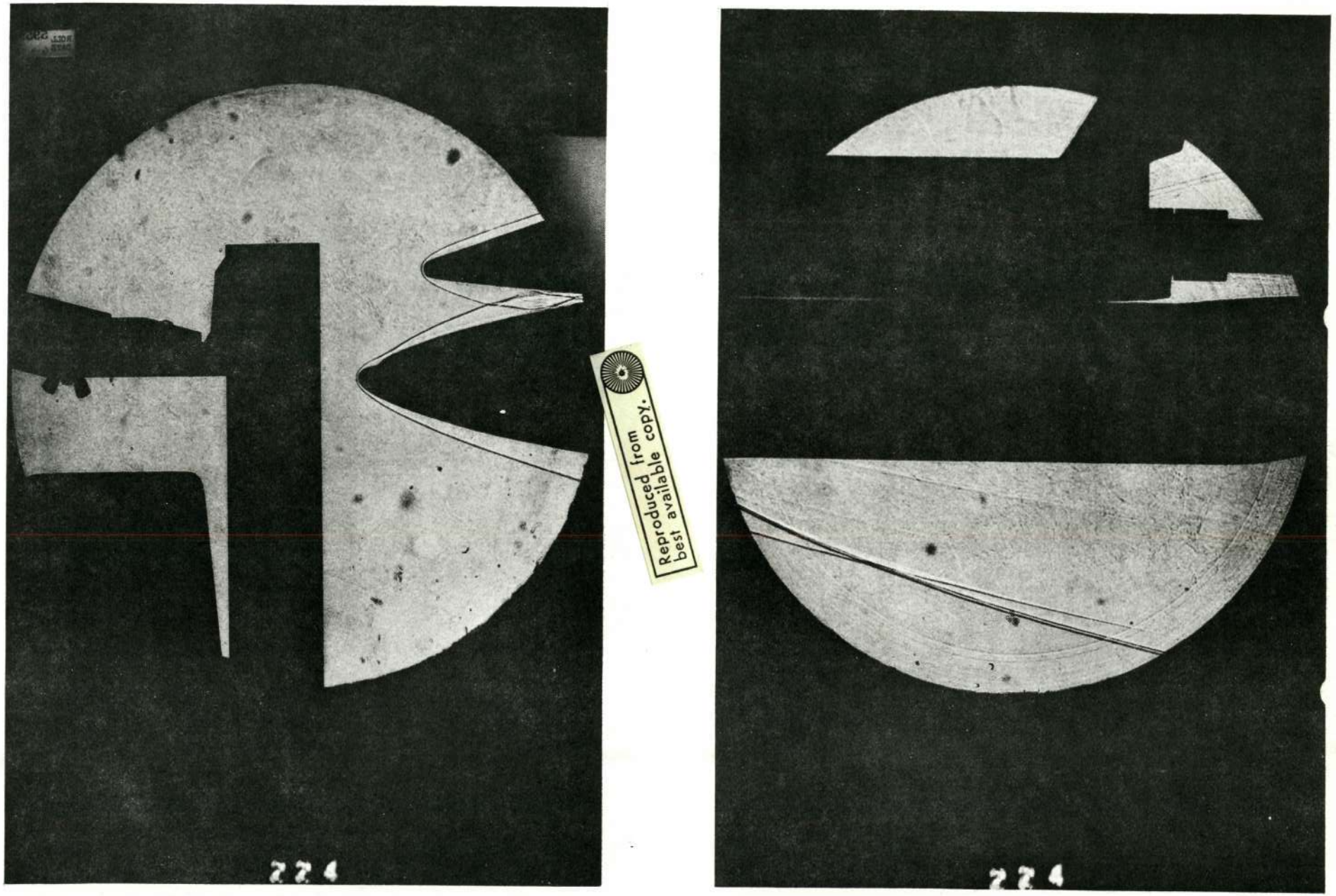




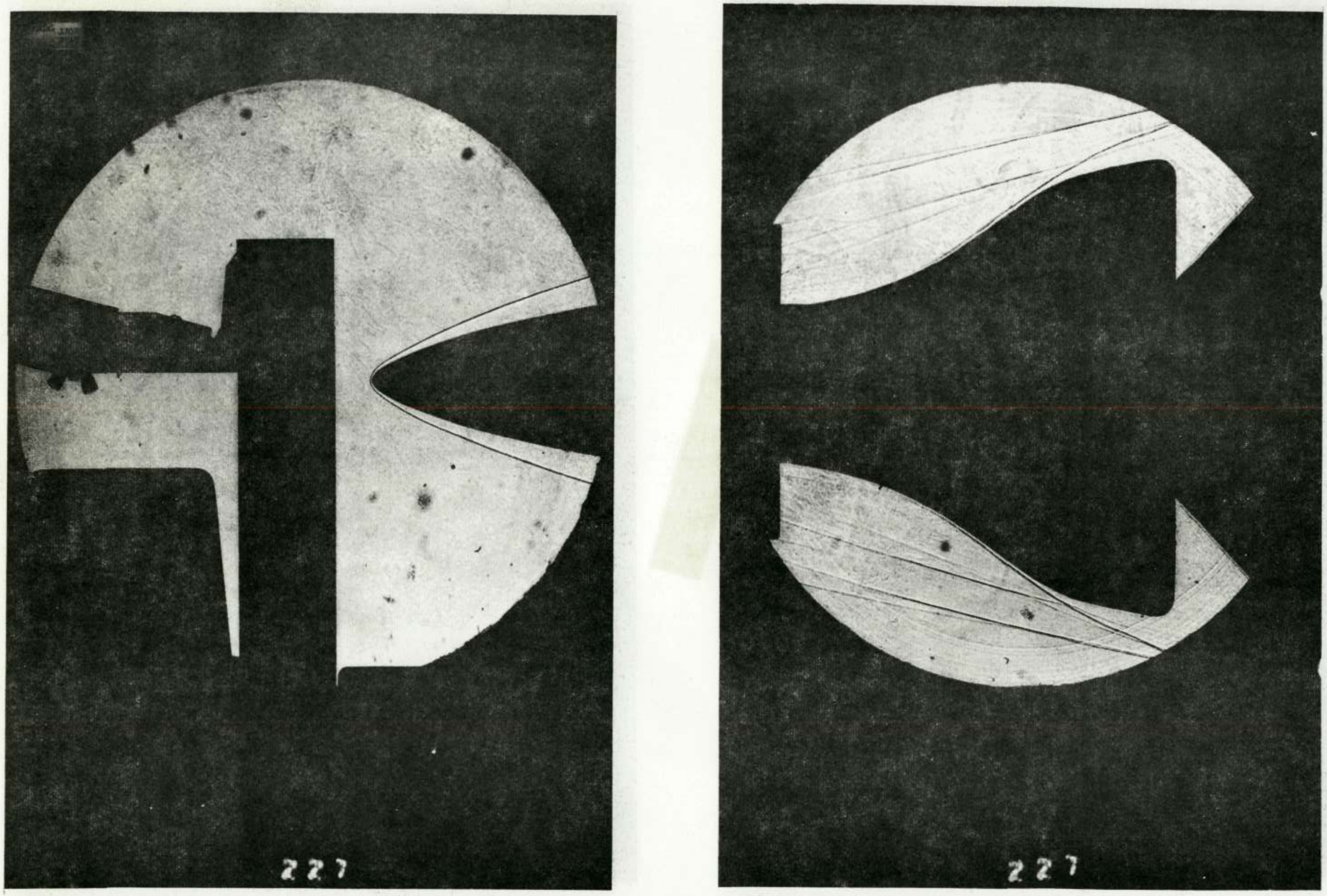




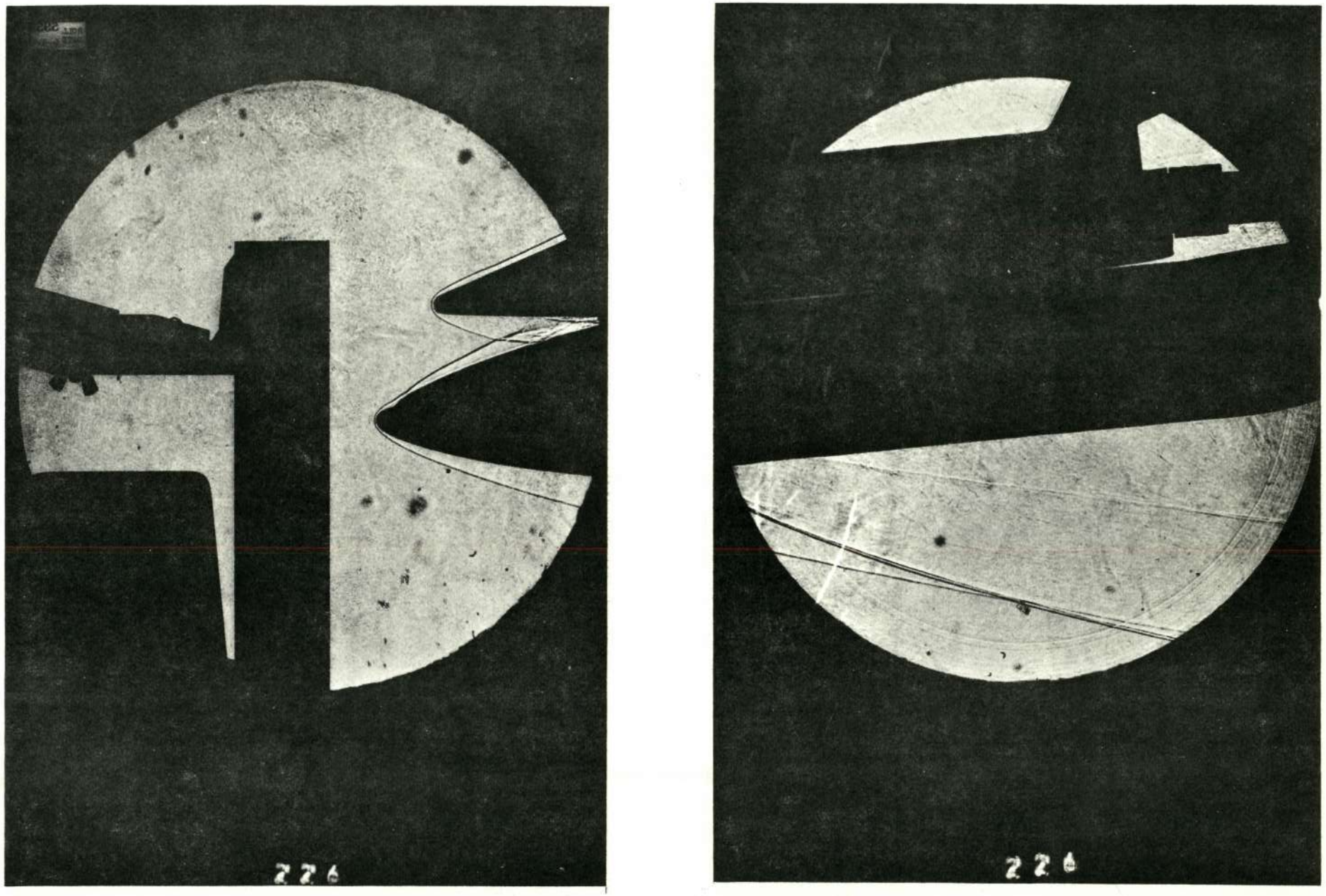
Shadowgraph Photograph at $\alpha = +5$, $\phi = 0$, $Re/ft = 2.5 \times 10^6$



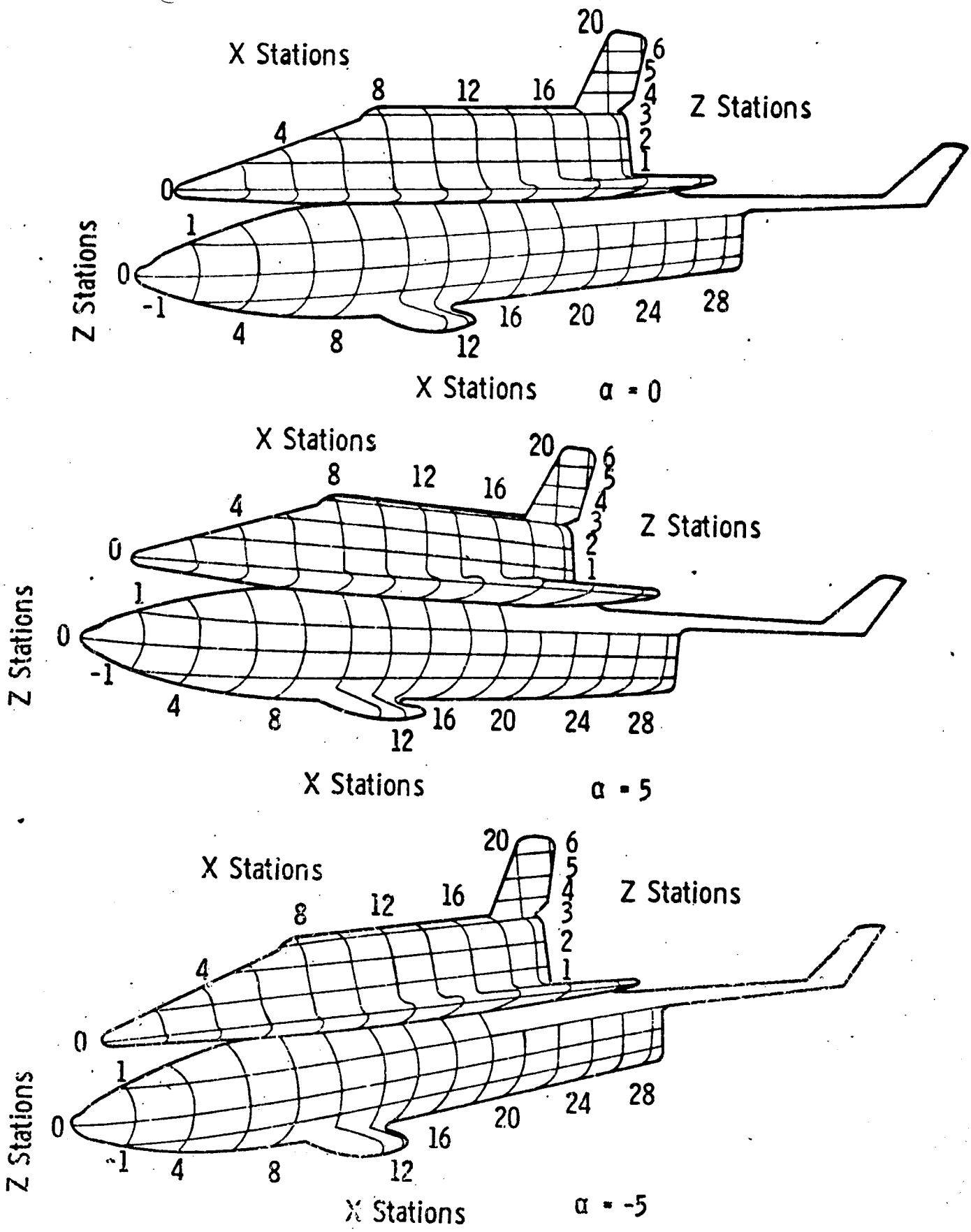
Shadowgraph Photograph at $\alpha = 0$, $\phi = 0$, Re/ft = 2.5×10^6



Shadowgraph Photograph at $\alpha = 0$, $\phi = 90$, Re/ft = 2.5×10^6



Shadowgraph Photograph at $\alpha = -5$, $\phi = 0$, Re/ft = 2.5×10^6



Grid Overlay for Mated Configurations